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A Macro Analysis of DoD Logistics
Systems. Volume I.

LOGISTICS SYSTEMS
IN THE
DEPARTMENT OF DEFENSE

Volume I, A Macro Analysis
of DoD Logistics Systems.
(LMI Task 76-6)

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PREFACE

The primary purpose of LMI Task 76-6 "A Macro Analysis of DoD Logistics Systems" is to provide a set of management indicators that can be used by the Assistant Secretary of Defense (Installations and Logistics) (ASD(I&L)). The purpose of such indicators is to provide information on the performance and cost of the logistics system in supporting the readiness of military forces.

The indicators to be developed must be consistent with the role and responsibilities of the ASD(I&L). This requirement has led to a study of the management structure of the Department of Defense (DoD) logistics systems. This report, Volume I of Task 76-6, contains a detailed description of those DoD logistics systems and their management structure.

Other volumes prepared under the Task will present the work done on the development of management indicators and the ways in which they can be used to help the ASD(I&L) exercise his management role. Volume II will report on the development of indicators pertinent to the Air Force logistics system.

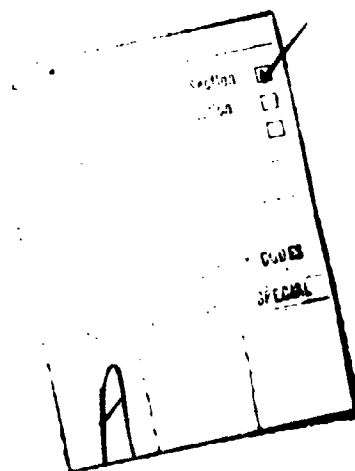


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Maintenance
Transportation
Installations and Housing

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FYDP
DMS
LPMES
MILSTEP
DSA Selected Management Data Report
Depot Maintenance Reports
Single Manager Agencies' Reports
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Supply
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**GLOSSARY OF FREQUENTLY USED
ABBREVIATIONS AND ACRONYMS**

A

AFLC	Air Force Logistics Command
AFSC	Air Force Systems Command
AIF	Army Industrial Fund
ALC	Air Logistics Center
ASIF	Airlift Service Industrial Fund
ASD(C)	Assistant Secretary of Defense (Comptroller)
ASD(I&L)	Assistant Secretary of Defense (Installations and Logistics)
ASN(I&L)	Assistant Secretary of the Navy (Installations and Logistics)
ASPR	Armed Services Procurement Regulation

B

BCE	Base Civil Engineer
BEAMS	Base Engineer Automated Management System
BHP	Bachelor Housing Program
BMAR	Backlog of Maintenance and Repair
BOS	Base Operating Support

C

CNM	Chief of Naval Material
CNO	Chief of Naval Operations
CRAF	Civil Reserve Air Fleet

D

DARCOM	Army Materiel Development and Readiness Command
DASD(I&H)	Deputy Assistant Secretary of Defense for Installations and Housing
DASD(SM&S)	Deputy Assistant Secretary of Defense for Supply, Maintenance, and Services
DFRIF	Defense Freight Railway Interchange Fleet
DIO	Directorate of Industrial Operations
DMS	Defense Management Summary
DSA	Defense Supply Agency*

*Renamed Defense Logistics Agency (DLA) on 31 Dec. 1976.

E
ECIP Energy Conservation Investment Program
ECM Electronics, Communications and Meteorological Equipment
EFD Engineering Field Division

F
FAD Force/Activity Designator
FHP Family Housing Program
FSS Federal Supply Service
FYDP Five Year Defense Program

G
GAO General Accounting Office
GBL Government Bill of Lading
GSA General Services Administration

I
ICP Inventory Control Point
IF Industrially-Funded
ISSA Interservice Supply Support Agreement

J
JCS Joint Chiefs of Staff

L
LOGAIR Logistics Air Transportation Command
LPMES Logistics Performance Measurement and Evaluation System

M
MAC Military Airlift Command
MATCO Military Air Traffic Coordinating Office
MIDA Major Item Data Agency
MilCon Military Construction
MILSTAMP Military Standard Transportation and Movement Procedures
MILSTEP Military Supply and Transportation Evaluation Procedures
MILSTRIP Military Standard Requisition and Issue Procedures
MSC Military Sealift Command
MTMC Military Traffic Management Command

N

NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Engineering Command
NAVSUP	Naval Supply Systems Command
NDRF	National Defense Reserve Fleet
NIF	Navy Industrial Fund
NORM	Not Operationally Ready (Maintenance)
NORS	Not Operationally Ready (Supply)

O

O&M	Operations and Maintenance
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense

P

PBD	Program Budget Decision
PD	Priority Designator
PDM	Program Decision Memorandum
PG	Priority Group
POM	Program Objectives Memorandum
PPBS	Planning, Programming and Budgeting System
PWC	Public Works Center
PWD	Public Works Department

R

RPMA	Real Property Maintenance Activities
------	--------------------------------------

S

SDT	Second Destination Transportation
-----	-----------------------------------

T

TR	Transportation Request
TRADOC	Training and Doctrine Command

U

UMMIPS	Uniform Materiel Movement and Issue Priority System
UND	Urgency of Need Designator

CHAPTER ONE: INTRODUCTION AND OVERVIEW

INTRODUCTION

This report, prepared for Subtask 1, presents functional descriptions of DoD logistics systems including supply, maintenance, transportation, and installation and housing. Other logistics functions, such as procurement and material acquisition, have been omitted by agreement with the study sponsor.

The rest of this chapter provides an overview of DoD logistics; the remaining chapters present the functional descriptions of the specific logistics activities and their management structures. Each activity is discussed in terms of: scope and trends; organization and responsibilities; management and control systems; and reporting, accounting, and budgeting procedures. The organizations covered include the Office of the Secretary of Defense (OSD), the Services, and the principal specialized agencies such as Defense Supply Agency (DSA)¹ and the General Services Administration (GSA).

Appendices 1-3 represent preparation for subsequent effort under this task. Appendix 1 lists available indicators dealing with logistics functions. Appendix 2 describes selected data sources that can be used to produce indicators. Appendix 3 lists and briefly describes pertinent DoD Directives and Instructions for each of the logistics functions. Appendix 4 is a copy of LMI Task 76-6.

OVERVIEW

The DoD owns and manages the largest amount of real and physical property of any single organization in the world. Table 1 presents a summarized listing of these assets which represent a total acquisition cost of \$240 billion.

Overall logistics responsibilities for support of those assets are best described by the charter assigned to the ASD(I&L), which directs him to represent and assist the Secretary of Defense (SecDef) to:

- Provide for delivery of approved weapon systems, subsystems, munitions, equipments, and support integral to their effective operation, as needed to support present and planned requirements of U. S. Forces and U. S. material commitments to other nations;
- Provide policy and support for the operation of all noncombatant logistics activities of DoD, including procurement, production, supply, installations, military construction, real property, facilities, housing, maintenance, transportation, distribution, support and related logistics services.

¹Renamed Defense Logistics Agency (DLA) on 31 Dec. 1976.

TABLE 1. DOD ASSETS ON HAND, 30 JUNE 1975
ACQUISITION COST IN BILLIONS

<u>Assets</u>	<u>Cost</u>
Real Property	\$ 43.0
Plant Equipment	12.8
Major Weapons & Military Equipment	115.5
Supply System Stocks	56.8
Construction in Progress	2.8
Government Provided Material	4.1
Industrial Funded Inventories	0.6
Excess and Surplus Property	<u>4.4</u>
Total	\$240.0

Thus, logistics encompasses all activities that require the use of resources for maintenance supply, transportation, procurement, and construction. Estimates have been periodically made of the cost of such resources. In the case of maintenance, the personnel involved include large numbers of military personnel assigned to combat support units, and civilians assigned to depot maintenance. A current estimate of DoD annual maintenance expenditures is about \$13 billion. Overall, the FY 1976 estimate of resources devoted to DoD logistics amounts to \$35.1 billion, or about 39% of the total DoD budget. Table 2 shows the distribution of logistics resources by major logistics activities.

Logistics responsibilities are defined at the Assistant Secretary level in OSD. They are similarly defined for the Assistant Secretary (Installations and Logistics) in each Military Department. In addition, each Military Service has a Deputy Chief of Staff (DCS) for Installations and Logistics, or equivalent, within its headquarters staff, and such a position is usually repeated at each lower-level headquarters. Thus, logistics is a staff function occurring throughout much of the defense organization, and it covers the types of activities listed in Table 2.

The basic structure followed in logistics is organization by function, such as supply, maintenance, procurement, transportation, etc. This functional breakout is followed in all

TABLE 2. ESTIMATED DISTRIBUTION OF LOGISTICS RESOURCE COSTS
FY 1976 - BILLIONS OF FY 1976 DOLLARS

<u>Activity</u>	<u>Amount</u>
Maintenance	13.1
Modification (Alteration of Ships, Aircraft, Other Equip.)	1.5
Spares Support (Peacetime Operations and War Reserve)	1.5
Sustaining Engineering Support	0.8
Supply Operations (Excludes Second Destination Transportation)	4.6
Procurement of War Reserves (Munitions)	1.5
Industrial Preparedness (Includes Modernization and Expansion of Ammunition Production Base)	0.6
Transportation of Persons and Things	4.7
Facilities Support (Includes Military Construction and Family Housing)	3.1
Real Property Maintenance Activities	3.0
Housekeeping, Headquarters, Command at Log Bases	0.6
Other Logistics Activities (e.g., "Mothballing," Property Disposal, Laundries, Printing Plants)	0.1
Total	35.1

Source: OSD(P&E), supplemented by LMI estimates.

aspects of management design, including the DoD Directives and Instructions system, the Service manuals and procedures, and personnel occupational structure.

The functional approach has the advantage of helping to rationalize logistics management and operations. At the same time, the functional approach tends to restrict management activities to specific channels, thus leading to myopic views of logistics. Concentrating on functional concerns can lead to treating logistics as an end, rather than as a means to operational capability.

CHAPTER TWO: SUPPLY

SCOPE AND TRENDS

Supply is the most traditional activity of a logistics system, linking the private production sector of the economy and military consumers. It also represents inventories maintained by the defense establishment; supply is thus associated with materiel, its effectiveness being measured by its capability to meet specific demands. The following attempts to convey the significance and scope of the supply function in DoD.

Military supply management involves the largest inventories and the greatest diversity of items to be found in any organization. The segment of DoD property holdings, shown in Table 1, that interests us most in this chapter is the so-called "Supply System Stocks," the inventory of equipment and supplies being held in DoD storage and warehousing facilities for issue to the operating forces. This property, valued at \$56.8 billion as of June 1975, (Table 3) consists of 4 million items of equipment, repair parts, ammunition, vehicles, clothing, subsistence items, fuel, and medical supplies. It is held for various purposes by depots, posts, camps, bases, supply shops, or stations.

TABLE 3. DOD SUPPLY SYSTEM STOCKS BY SERVICE

(30 June 1975)

<u>Service/Agency</u>	<u>Value</u> (Billions)
Army	\$17.021
Navy	18.661
Marine Corps	2.572
Air Force	14.830
DSA	<u>3.737</u>
Total	\$56.821

The two largest categories of these supply inventories are ammunition, valued at \$11.9 billion, and aircraft components and parts, valued at \$11.2 billion. Generally, supply items issued to consuming military units such as divisions, air wings, and ships are not included in the \$56.8 billion because they are in the hands of the ultimate users, and carried on their unit records until consumed or otherwise disposed of.

Supply management should provide the materiel support required by the Military Services and foreign customers under all conditions of peace and war. To be efficient,

this support must be furnished at a low cost, for both the materiel and the effort in supplying it. Three facts stand out:

- Supply must be effective - national survival may depend on it.
- Supply must be economical - money and resources available to the supply manager are limited.
- Supply management must be flexible - customer needs are diversified and subject to constant change.

The problems of supply management stem from these three factors. Within these constraints, military supply management, like every other management task, consists of breaking the job down into manageable segments, planning for successful performance, and measuring that performance.

When reducing the vast DoD supply system to manageable segments, three points should be kept in mind. First, the supply system is worldwide. This suggests that manageable segments could be established on a geographical basis. Second, the successful operation of the system depends on the performance of a number of specialized functions, such as storage, distribution, procurement, maintenance, communications, and data processing. This suggests that activities could be compartmentalized. Third, the system contains 4 million items that vary greatly in use, size, complexity, value, and volume of issues. This suggests that manageable segments could be established by grouping items according to some classification system.

Determination of the overall management method for items in the supply systems of the Military Services and DSA depends upon five considerations: (1) criticality, (2) dollar value, (3) procurement lead time or difficulty to procure or manufacture, (4) demand or usage rate, and (5) degree of difficulty to transport. Now that reliable communications, high-speed transportation, criticality, and dollar considerations have almost entirely eliminated the need for management by geographical area, the preferred method of assigning worldwide materiel responsibility is by item groupings. Under this concept, a manager is put in charge of a system or group of items, and has full responsibility for all materiel functions necessary to meet the demands of customers for those items.

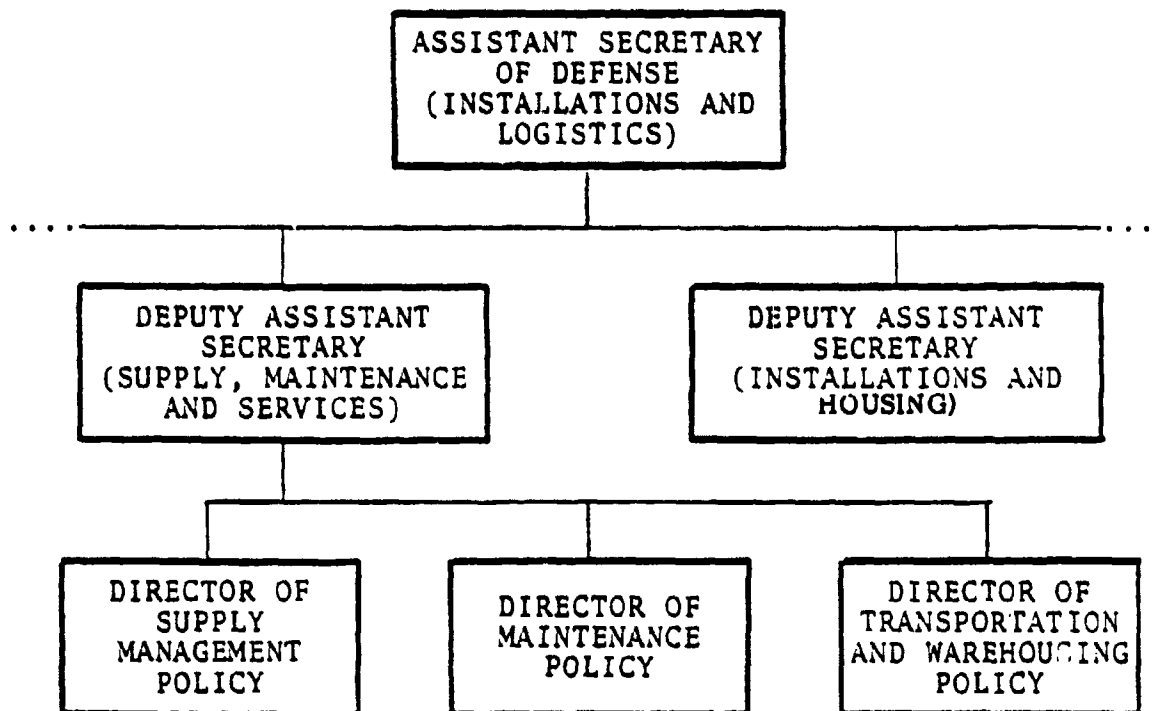
ORGANIZATION AND RESPONSIBILITIES

The following text presents the organization and functional responsibilities for supply within DoD. The structure consists generally of OSD, the Joint Chiefs of Staff (JCS), and the three Military Departments. GSA also supplies DoD through its Federal Supply Service (FSS).

1. OSD

The top supply management office in DoD is OASD(I&L). ASD(I&L) is the principal staff assistant to SecDef for the supply function. The principal deputy within OASD(I&L) for supply operations and policy is the Deputy Assistant Secretary of Defense for Supply, Maintenance, and Services (DASD(SM&S)). (See Figure 1.) His principal directorate for this functional area is the Directorate of Supply Management Policy.

FIGURE 1. OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
(Installations and Logistics)



Another major organization at the SecDef level is the Office of JCS. Within this office is the Logistics Directorate (J-4). Supply aspects of logistics planning and guidance under JCS cognizance fall within the responsibility of the JCS Director of Logistics.

The major supply operating agency reporting directly to SecDef is DSA. In addition, GSA provides DoD with common-use, commercial-type items used by all federal agencies.

Military Departments: Within the Military Departments, there are four Military Services; the headquarters and field activities of each provide supply support

down to the so-called retail level. The military supply system is characterized by echelons of supply, with the number varying in each of the Services.

In addition, the Departments have two categories of management within their headquarters organizations. One category is represented by the Assistant Secretary for Installations and Logistics. His responsibilities within his Service are comparable to those of ASD(I&L) for DoD as a whole. A member of the Assistant Secretary's staff in each Department is designated responsible for supply policy. The other category is represented by the DCS within the military staff of each Service.

2. Army

Headquarters (Figure 2): The Army supply system is governed by broad policies established by SecDef. The Secretary of the Army is responsible for implementing all DoD Directives and Instructions involving the supply system. The Secretary of the Army is aided in supply and logistics matters by the Assistant Secretary of the Army (Installations and Logistics), who in turn has a Deputy for Supply, Maintenance and Transportation.

Within the Army staff, the Deputy Chief of Staff for Logistics (DCS (Logistics)) is the principal advisor to the Chief of Staff in logistics matters. Supply management for the Army is exercised by the staff of DCS (Logistics). Other staff agencies within the Department of Army have major supply responsibilities for specialized activities, such as the Surgeon General's for medical materiel.

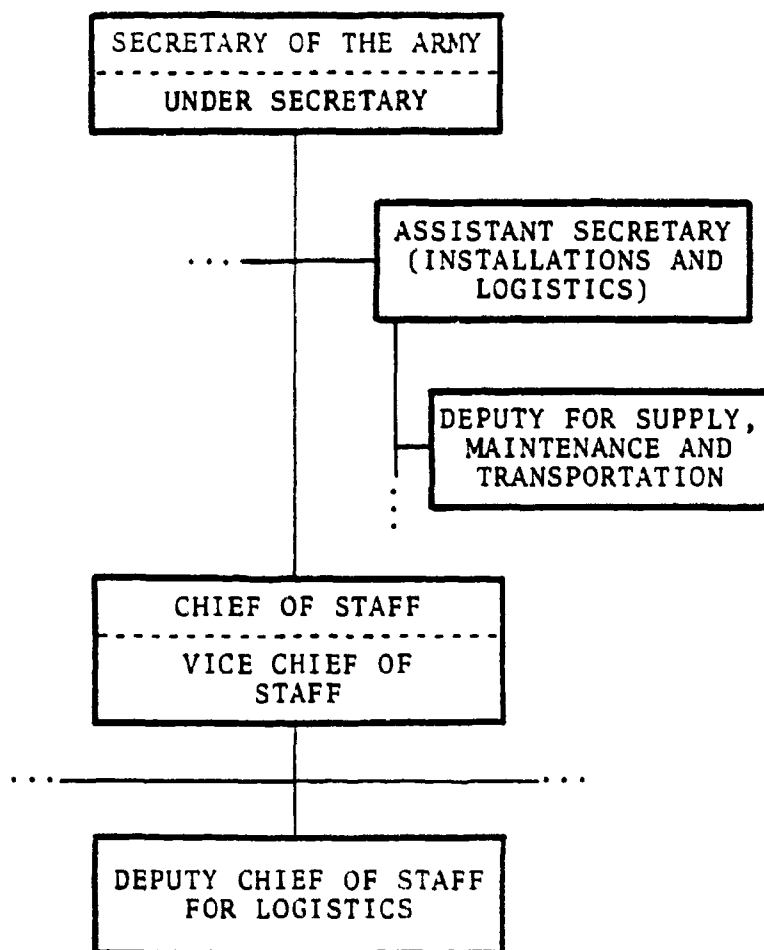
(a) Wholesale

DARCOM (Figure 3): The Army Materiel Development and Readiness Command (DARCOM) is the primary wholesale supplier of non-medical materiel for the Army. DARCOM has the responsibility for development, test, cataloging, requirements determination, procurement, production, quality assurances, distribution, supply control, and disposal of supplies and materiel. DARCOM provides technical assistance in support of Army-managed materiel to field commanders. This assistance includes expertise in the functions and operations of supply management.

DARCOM has seven major subordinate commands. Six are Commodity Commands responsible for materiel management in specific commodity areas; one is a Service Command responsible for test and evaluation.

Overseas Commands: Each major overseas Army command is involved in logistics management and planning, and is directly responsible to the Chief of Staff, United States Army. These commands have major subordinate elements with varying degrees of autonomy in supply matters, depending upon specific operational needs.

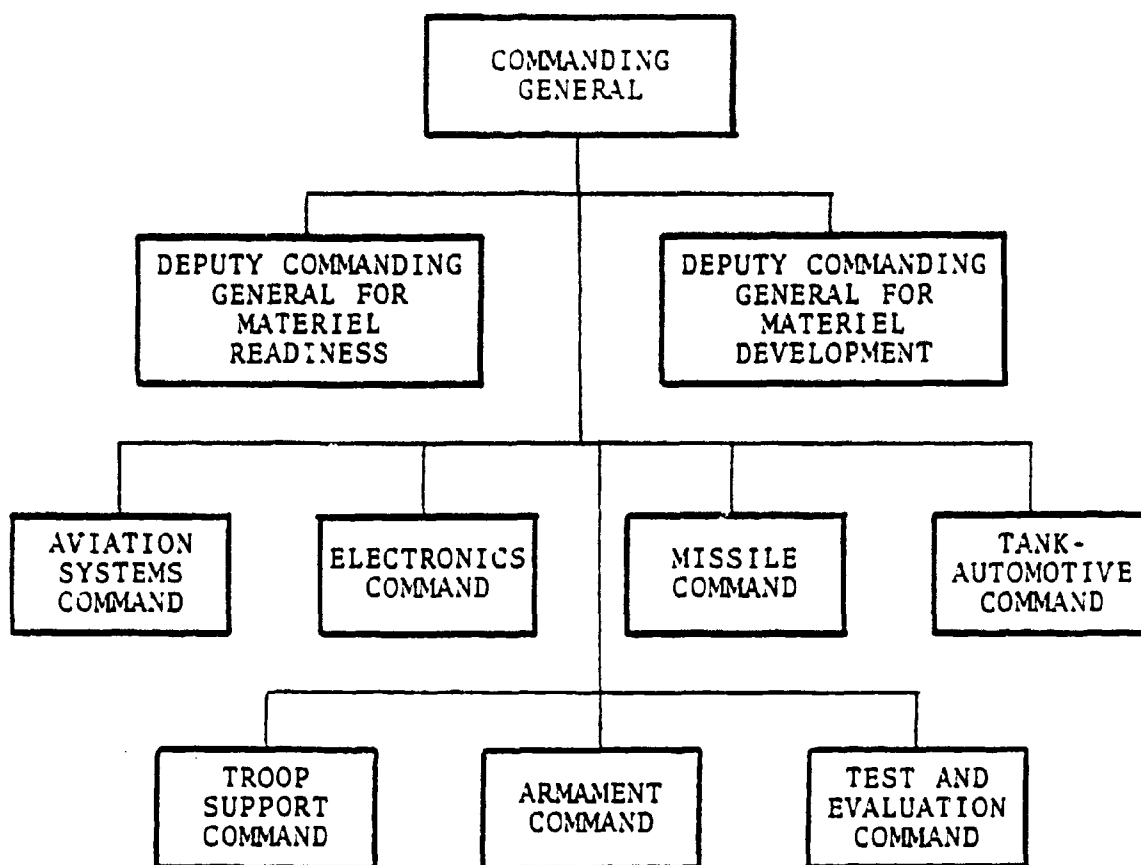
FIGURE 2. ARMY HEADQUARTERS - LOGISTICS OFFICES



(b) Retail

DARCOM: As principal commercial supplier for Army-managed items, DARCOM has a mission directly related to retail supply. DARCOM develops needed items, and initiates procurement based upon the anticipated demands from the retail segment. Within CONUS, the principal supply agencies are the Commodity Commands of DARCOM, where the national Inventory Control Points (ICPs) are located, DSA Supply Centers and GSA Regional Offices. These agencies support the supply systems established at Army retail-level installations, and are responsible for managing assigned commodities and meeting the installations actual supply needs.

FIGURE 3. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

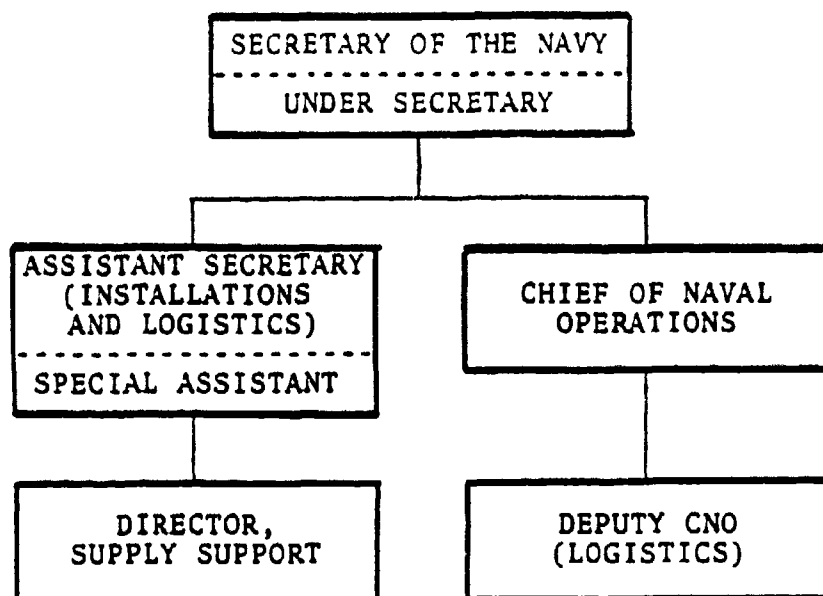


3. Navy

Headquarters (Figure 4): The Secretary of the Navy, under the direction, authority, and control of SecDef, is responsible for the policy and control of both the Navy and Marine Corps. He has a number of civilian and military executive assistants. The Assistant Secretary of the Navy (Installations and Logistics), ASN(I&L), is responsible for department-wide policy supervision of all materiel matters. Within his office, the Special Assistant and Director of Supply Support assist him directly on supply management.

The Chief of Naval Operations (CNO) is responsible for both user and producer logistics in the Navy. The Deputy CNO (Logistics) is the principal advisor to the CNO on the conduct of logistics affairs, and is charged with planning and providing the logistics support needs of the operating forces of the Navy, except for those areas assigned elsewhere. Logistics support for the operating forces is coordinated by the Commanders Service Forces, Atlantic and Pacific.

FIGURE 4. NAVY HEADQUARTERS - LOGISTICS OFFICES



The Chief of Naval Material (CNM), under CNO, commands all activities of the Naval Material Command (Figure 5). He is responsible to CNO for materiel support to the operating forces of the Navy, and to the Commandant of the Marine Corps for certain materiel support to the Marine Corps.

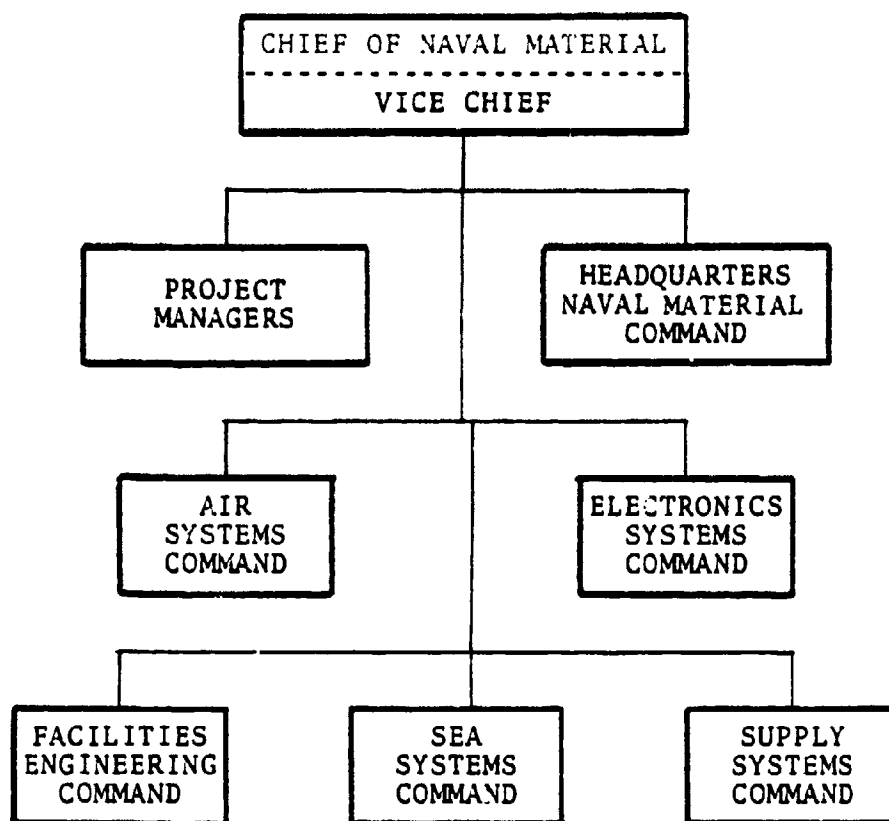
The Naval Material Command includes the Headquarters, Naval Material Command, and five principal subordinate systems commands, separately organized project management offices, and the shore (field) activities that are a part of the Naval Material Command. Field activities include industrial activities, research and development centers, and laboratories. The principal systems commands are: Naval Air Systems Command, Naval Electronics Systems Command, Naval Facilities Engineering Command (NAVFAC), Naval Sea Systems Command, and Naval Supply Systems Command (NAVSUP).

The chain of command within the Naval Material Command normally runs from CNM to the systems commanders. However, CNM may also establish designated projects under project managers for selected weapons, equipments, or systems for which intensified procedures are desired.

(a) Wholesale

NAVSUP: NAVSUP is responsible for supply management policies and methods; administration of the Navy Supply System; publications and printing; the resale program; the Navy Stock Fund; the field procurement system, and transportation of Navy property; and materiel functions related to materials handling equipment, food service,

FIGURE 5. NAVAL MATERIAL COMMAND



and special clothing. NAVSUP oversees procurement of materiel and services throughout the Department of the Navy for which no other procuring activity, office, or command is delegated authority.

The Navy supply system functions on the basis of centralized control of assets. Its nerve centers are the ICPs—the offices specifically designed to unite the supply management functions under the guidance of NAVSUP and the technical or engineering functions under the guidance of the hardware systems commands. In effect, ICPs perform functions of NAVSUP and other technical and hardware systems commands that have been decentralized to the field. In this respect, they are not separable from the Naval Material Command, for they represent an essential element in discharging the materiel support functions for which CNM is responsible. As the Navy supply manager, the commander of NAVSUP heads the ICPs.

There are two Navy ICPs: Aviation Supply Office and Ship Parts Control Center. Aviation Supply Office is responsible for equipment and parts peculiar to Navy

and Marine Corps aviation, while Ship Parts Control Center is responsible for conventional ammunition, shipboard and base repair parts.

Navy fleet supply support is based upon an organic level of supply and two echelons of resupply: (1) the mobile logistics support ships and overseas bases; and (2) the supply centers in CONUS. The organic level provides the materiel specified in the Consolidated Shipboard Allowance List or Aviation Consolidated Allowance List. The first echelon of combat resupply support consists of the ships of the Mobile Logistics Support Forces, which include tenders, repair ships, and fleet issue ships, augmented by a few overseas depots. Supply centers, the second echelon of resupply, provide the materiel located predominantly at the tidewater centers in CONUS. In addition to fleet support, the supply centers support the Shore Establishment. ICPs have the responsibility of providing this supply to meet user needs for most of the Navy supply items.

(b) Retail: The Navy has established a Navy Retail Office at the Fleet Materiel Support Office to exercise financial control and retail management of materiel managed at the wholesale level by DSA, GSA, and other Services. This office provides these integrated managers with certain Navy program requirements, and develops and publishes procedures for management of retail stocks.

4. Marine Corps

The supply system of the Marine Corps consists of three essential managerial levels: Marine Corps Headquarters and the in-stores and out-of-stores elements. The system extends from Headquarters down to the user. Concepts, policies, and guidance emanate from Headquarters; distribution is performed by the in-stores system, while the ultimate user is the retail or out-of-stores element.

Headquarters

The Commandant of the Marine Corps is directly responsible for its total performance, including the requirements, efficiency, readiness, and operations of its supply system. His direction of the supply system encompasses planning and determining the support needs of the Marine Corps for equipment, weapon systems, materials, supplies, facilities, maintenance, and supporting services. Another of his duties is to provide staff assistance to ASN(I&L) in supply matters. The Headquarters staff assists the Commandant with these tasks.

The DCS (Installations and Logistics) is the principal logistician on the Commandant's general staff. He is responsible for logistics plans, policies, and objectives, and for programs relating to materiel readiness. The DCS (Installations and Logistics) is also the principal staff adviser to the Commandant in supply matters, and is charged with the management of the supply system, the Marine Corps Stock Fund, the utilization and disposal program, and the procurement of materiel and services.

(a) Wholesale: The in-stores element includes assets and pertinent management functions under centralized item and/or financial accountability and control. The in-stores element is managed under the Marine Corps Unified Materiel Management System, whereby all management functions normally associated with military supply have been integrated into a single system. The Marine Corps Unified Materiel Management System uses standardized formats and languages, and is compatible with interfacing systems of DSA, GSA, and other Military Services.

The organizational structure of the Marine Corps Unified Materiel Management System consists of Headquarters, one ICP and two remote storage activities. The ICP is the central supply processing point, and the central coordination and technical direction agency for the operation of the Marine Corps Unified Materiel Management System.

The Commanding General, Marine Corps Supply Activity, Albany, Ga., is designated as the Commander of the ICP. He is responsible for inventory control of all centrally-managed and centrally-procured items (other than subsistence and commissary items) procured under the Marine Corps Stock Fund, plus the majority of Appropriations Stores Account items (excluding ground ammunition).

There are two remote storage activities in the Marine Corps Stores Distribution System: the Marine Corps Supply Centers at Albany, Ga., and Barstow, Calif. Each is part of the base where it is located. The remote storage activities function primarily in direct support of the Fleet Marine Forces, by providing depot-level repair and rebuilding, and serving as the principal storage sites for prepositioned mobilization stocks of both major and secondary items.

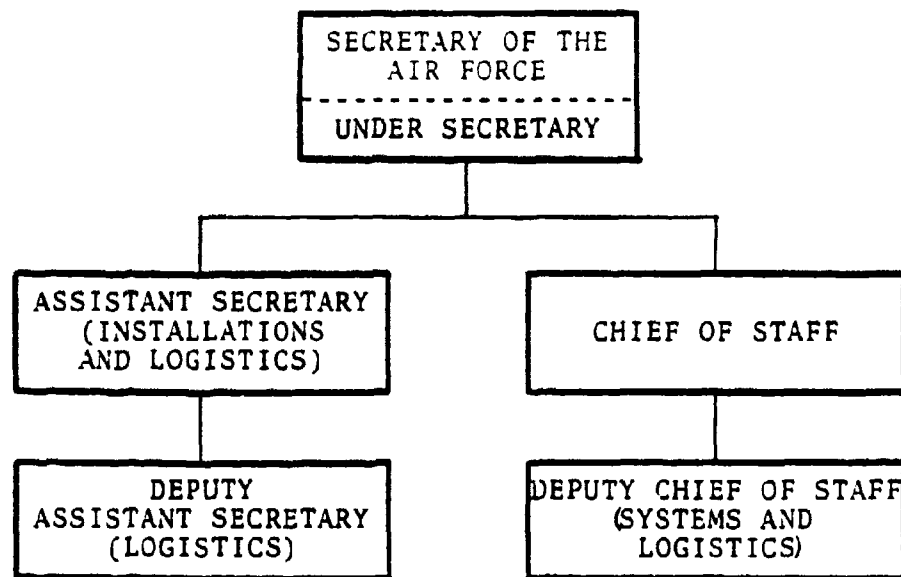
(b) Retail: The third portion of the Marine Corps Supply System is the out-of-stores element. This is the user element, and consists primarily of the assets held by units of the Fleet Marine Forces (Divisions, Air Wings, and Force Troop Units), posts, camps, stations, and Marine Corps Recruiting and Reserve Districts.

Materiel in the out-of-stores element is not centrally managed. Stockage objectives at the user level are based on actual usage, or on mandatory Table of Equipment Allowances published for each unit by Headquarters Marine Corps.

5. Air Force

Headquarters (Figure 6): The Assistant Secretary of the Air Force (Installations and Logistics) is the senior member of the Secretary of Air Force staff responsible for supply matters. The Deputy Assistant Secretary for Logistics assists the Assistant Secretary; the former in turn has an Assistant Deputy for Supply and Maintenance. The DCS (Systems and Logistics) is responsible for developing and directing programs and

FIGURE 6. AIR FORCE HEADQUARTERS - LOGISTICS OFFICES



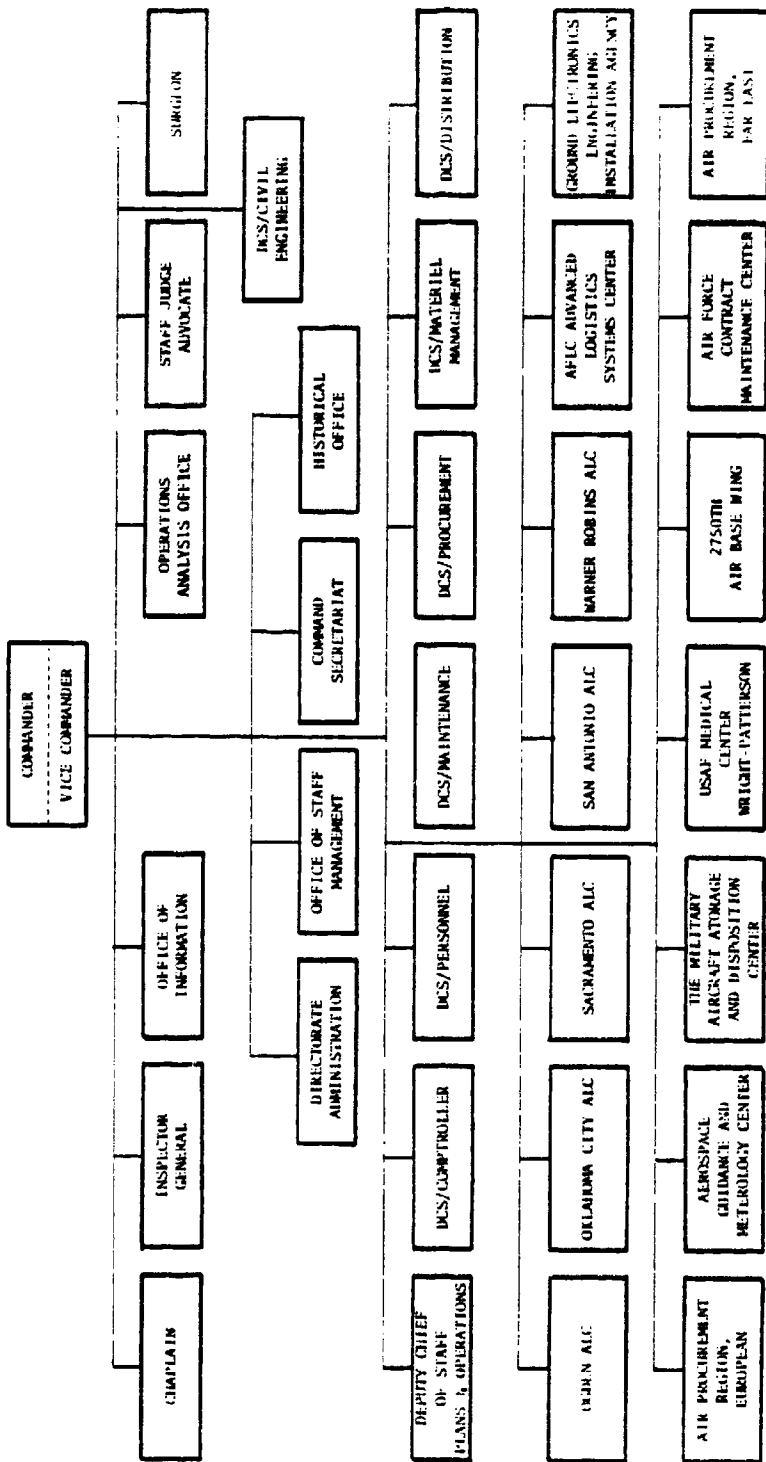
policies, and for providing logistical support management to Air Force and Reserve Forces activities.

There are 15 major commands and seven separate operating agencies which together represent the field organization of the Air Force. These commands are organized on a functional basis in CONUS and on an area basis overseas. They are responsible for organizing, administering, equipping, and training their subordinate elements for the accomplishment of assigned missions. The major CONUS commands are Aerospace Defense Command, Air Training Command, Military Airlift Command, Strategic Air Command, Tactical Air Command, Air Force Systems Command, and Air Force Logistics Command (AFLC). The major overseas commands are U. S. Air Forces in Europe and the Pacific, and Alaskan Air Command.

(a) Wholesale

AFLC (Figure 7): AFLC provides logistics support and services for all Air Force organizations, systems, and materiel. The main activities of Headquarters, AFLC, are to develop procedures and to furnish policy guidance to Air Logistics Centers (ALCs) and other field activities. Among its functions are: inventory management of assigned Federal Supply Groups and Classes, central procurement of initial repair parts, components, and common aerospace ground equipment, and central procurement of all replenishment items.

FIGURE 7. AIR FORCE LOGISTICS COMMAND



ALCs: AFLC operates five ALCs in CONUS. These centers control depot storage operations and provide logistics assistance to Air Force activities within their geographic area of responsibility. The centers are worldwide managers for commodity classes and weapon systems assigned to them. The ALCs are: Warner Robins, Ga; Oklahoma City, Okla.; Ogden, Utah; San Antonio, Tex.; and Sacramento, Calif.

Headquarters, AFLC has assigned sole supply management responsibility within the Air Force for the Federal Supply Classification Classes and Air Force Commodity Classes to inventory managers at the five centers. These inventory managers perform the worldwide supply management functions of computing requirements, cataloging, distributing and disposing of assigned items. Bases requisition materiel directly from the inventory manager responsible for supply of the desired item.

System Support: Commodity specialization has raised the problem of coordination among the inventory managers. For example, the various components and repair parts needed to keep an aircraft or missile operational and combat-ready may be stored at, and managed by, several ALCs. A temporary supply failure at any one center can nullify the efforts of all the others to maintain support for a particular aircraft or missile. System support management has therefore been adopted for certain systems.

System managers have been designated for first-line weapons and supporting systems. The systems manager is responsible for integrating logistics support for the weapon systems assigned to him. He thus helps provide responsive support to demands of tactical units. To expedite control and requisitioning, the system manager is authorized to acquire and maintain a complete range of supply items required by his assigned systems.

Major Commands: At major command level, the Director of Logistics or Deputy Chief of Staff for Logistics is charged with planning and supervising logistic support of the entire command. If a command is divided into numbered Air Forces, the Director of Logistics at each Air Force Headquarters has comparable responsibilities for that Air Force. This pattern applies to all echelons, down to, and including, the wing.

The bases controlled by the major commands are the primary customers of the Air Force wholesale supply system. Bases also draw support from the other Services, DSA and GSA. Overseas bases are on direct support, and requisition directly from the applicable source of supply.

(b) Retail: At airbase level, the consolidated base supply activity is responsible for the overall management, technical supervision, and maintenance of records for most supplies consumed by operating units. The base supply activity is the heart of the retail system, and the first echelon of the Air Force supply system, where supplies are issued to the customers or consumed by the base itself.

6. DSA

Organization (Figure 8): DSA is headed by a Director, a Deputy Director, a second Deputy Director (Contractor Administration Services), and a headquarters establishment, overseeing the primary field-level activities, and their subordinate activities. The headquarters staff assists the Director in directing and controlling the agency as a whole, and is responsible for policy development, broad planning, and staff supervision of the total mission of DSA.

The 26 primary field-level activities are categorized as Defense Supply Centers (6), Defense Depots (4), Service Centers (5), and Defense Contract Administration Service Regions (11). These activities report directly to the Director, except for the Defense Contract Administrator Services Regions, which are under the management and control of the Deputy Director, Contract Administration Services.

The Defense Supply Centers handle materiel management of assigned commodities and supply items relating to the following areas: food, clothing, textiles, medical, chemical, petroleum, industrial, construction, electronics, and general items of supply. Four of the Supply Centers and four Defense Depots receive, store and issue assigned commodities.

The Service Centers are: Defense Logistics Services Center, Defense Industrial Plant Equipment Center, Defense Property Disposal Service, Defense Documentation Center, and the Defense Supply Agency Administrative Support Center. They furnish varied support services.

The 11 Defense Contract Administration Service regions provide contract administration services. These regions have subordinate district, plant and area offices.

Defense Supply Centers: Each Defense Supply Center manages a specific range of related items, designated as commodities, which generally have similar applications to specific types of functional support, such as construction, electronics, fuel, etc. The Centers are true managers of the assigned commodities, and make all decisions as to procurement, stock positioning, issues, processing of requisitions, determination of excess stocks, disposal, cataloging, identity, and financial accounting for items within the commodity. The six Defense Supply Centers are:

Defense Construction Supply Center, Columbus, Ohio

Defense Electronics Supply Center, Dayton, Ohio

Defense General Supply Center, Richmond, Va.

Defense Industrial Supply Center, Philadelphia, Pa.

Defense Personnel Support Center, Philadelphia, Pa.

Defense Fuel Supply Center, Alexandria, Va.

The first three Defense Supply Centers have allocated storage activities as either principal distribution depots or specialized support depots. The co-located centers and storage activities operate separately as far as support missions are concerned, but share a common command and administrative support element.

Storage and Distribution Activities: There are 16 primary storage locations in the materiel distribution system, responsible for receipt, storage, physical inventory, maintenance in storage, and issue of assigned materiel, except for perishable subsistence, and bulk fuels and petroleum products. Perishable subsistence is stored and distributed through a system of four government-operated facilities, mostly through contract-operated commercial storage points.

DSA does not manage all of its storage and distribution activities. Of the 16 primary storage locations, only seven are managed and operated by DSA: four Defense Depots and the three storage activities co-located with Defense Supply Centers. Nine primary storage locations are Navy-managed activities distributing DSA materiel to Navy requisitioners only. Activities of the materiel distribution systems are identified as either principal distribution depots (6), specialized support depots (3), or direct supply support points (7) according to the type of distribution being performed.

A principal distribution depot stocks a wide range of assigned commodities for support of all authorized requisitioners within a specific geographic area that may include CONUS plus designated overseas areas supported through ports or embarkation close to the depot. The six principal distribution depots are:

- Defense General Supply Center, Richmond, Va.
- Defense Construction Supply Center, Columbus, Ohio
- Defense Depot, Mechanicsburg, Pa.
- Defense Depot, Memphis, Tenn.
- Defense Depot, Ogden, Utah
- Defense Depot, Tracy, Calif.

A specialized support depot is so designated because either its commodity or assigned distribution mission is specialized. It may stock a wide range of commodities for a very limited number of authorized requisitioners, such as the Navy only, or store a single commodity supporting normal distribution to all authorized requisitioners. The specialized support depots are:

- Defense Electronics Supply Center, Dayton, Ohio
- Navy Supply Center, Norfolk, Va. (all commodities, Navy support only)
- Navy Supply Center, Oakland, Calif. (all non-medical commodities, Navy support only)

Direct supply support points are established at Military Service installations that are volume users of certain classes of items in the performance of the assigned installation mission. All current direct supply support points are established at Navy maintenance activities with major shipbuilding and repair missions, and at Navy recruit processing centers where Navy personnel are outfitted with initial allowances of clothing and equipment. DSA positions stock at these activities under agency ownership, but storage and issue is accomplished by the Navy installation in support of its own requirements. Stocks are selectively positioned at direct supply support points to insure that range and depth of items are limited only to those with volume requirements sufficient to justify replenishment through direct delivery from procurement sources. The seven direct supply support points are:

Naval Supply Center, Charleston, S.C.

Navy Supply Center, San Diego, Calif.

Portsmouth Naval Shipyard, N.H.

Philadelphia Naval Shipyard, Pa.

Norfolk Naval Shipyard, Va.

Puget Sound Naval Shipyard, Wash.

Naval Training Center, Great Lakes, Ill.

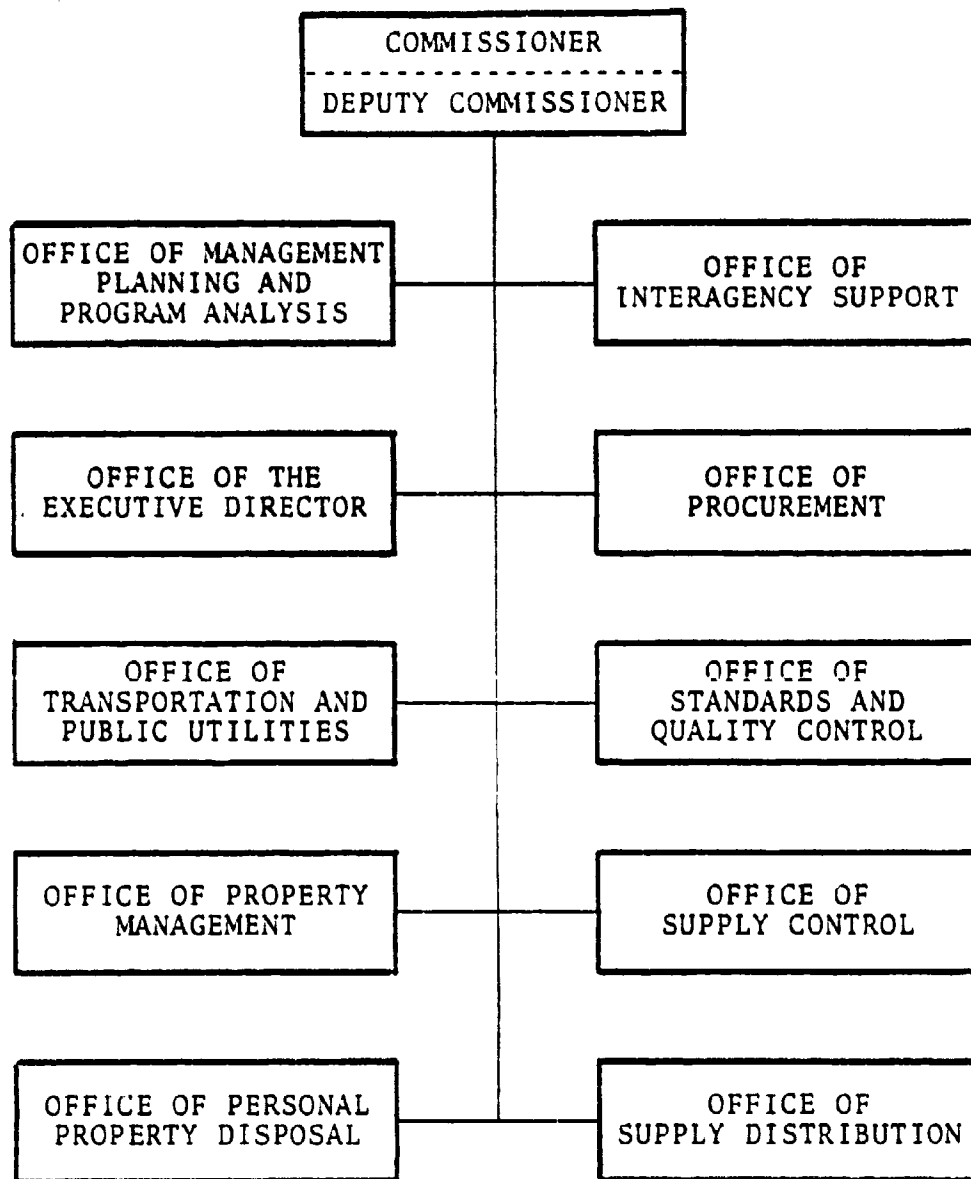
Service Centers: DSA Service Centers consist of the Defense Logistics Service Center, the Defense Property Disposal Service, the Defense Industrial Plant Equipment Center, the Defense Documentation Center, and the DSA Administrative Support Center.

Responsibilities assigned to these centers include the administration of programs and services as follows: DoD-wide cataloging (Defense Logistics Service Center); materiel utilization, surplus property disposal (Defense Property Disposal Service); maintenance of records of in-use government-owned industrial plant equipment; storage and redistribution of idle industrial plant equipment (Defense Industrial Plant Equipment Center); operation of DoD research, development, test and evaluation, scientific and technical information systems; acquisition, storage, announcement, retrieval, and secondary distribution of secondary and technical documents; primary distribution of foreign technical reports (Defense Documentation Center); and the provision of administrative support and common service functions to DSA activities within the Washington, D. C. metropolitan area (Defense Supply Agency Administrative Support Center).

7. GSA

The Federal Supply Service (FSS) (Figure 9), which is a part of GSA, supplies military activities worldwide with those items assigned to it for integrated materiel

FIGURE 9. FEDERAL SUPPLY SERVICE



management. FSS performs all the functions required of a supply system, including cataloging, standardization, inventory management, procurement, quality control, distribution, and field contract administration. It interfaces with DoD with a standardized requisitioning and priority system. Complete supply operations are carried out by the ten GSA regions.

Supplies are distributed through a nationwide network of 22 supply distribution facilities. The FSS currently stocks about 35,000 common-use items valued at

\$180 million. Total dollar value of all items shipped to ordering agencies in FY 1974 amounted to \$817 million, of which \$502 million, or over 60%, went to defense activities.

The FSS can react to a variety of requisitioning channels in support of overseas military activities. The Defense Transportation System is used for movement of materiel to overseas military activities.

The major administrative problems between GSA and DoD concern their assigned supply responsibilities, because both organizations have jurisdiction over common-use items. The National Supply System was initiated by a 1964 agreement between DoD and GSA. This agreement set the stage for further agreements about which items GSA would manage nationally, and how GSA would participate in the supply support of DoD. Through such agreements, GSA's participation in DoD support has led to the growth of a National Supply System.

MANAGEMENT AND CONTROL

This section discusses supply management and control processes within DoD. The subject is very broad, cutting across types of items, echelons of supply, and methods of management, and we have chosen to be selective. DoD classifies its materiel as either major or secondary items. Each category involves a different management process. This report focuses on secondary items, which represent the hard core of supply materiel responsibility, and dominate supply management and operations.

Supply management is also differentiated between wholesale and retail levels of support. In Section 1, "Secondary Item and Repair Parts Management," we discuss the wholesale management system for such materiel. We follow this treatment of wholesale supply with Section 2, "Retail Level Supply Management." Retail systems in the different Services vary considerably, reflecting the operational environment within which their combat forces must function. The effectiveness of the retail system has a major impact on the readiness of combat forces. Consequently, Section 2 covers retail systems in some detail.

1. Secondary Item and Repair Parts Management

Overall authority and responsibility for basic materiel management policy and guidance rests with ASD(I&L). This duty includes the management of secondary items. Secondary items include: reparable components, subsystems and assemblies, consumable repair parts, bulk items and material, subsistence and expendable end items (including clothing and personal gear). Various methods are used to select, group, procure, and otherwise manage secondary items.

(a) Methods

Selective Management: Selective inventory management is a widely used approach whereby the intensity of management effort is determined by the prime

characteristics of the managed item. Management attention focuses upon items of greater importance; those with the higher dollar inventory investment are emphasized. This approach categorizes items to determine the degree of thoroughness of controls and review to be applied. Some criteria are: dollar investment in inventories, degree of protection desired against stock depletion, high unit cost of the item, combat essentiality, and difficulty of processing. Selective management extends the item manager's exact knowledge and control over worldwide assets. DoD selective inventory management for secondary items encompasses the following general areas:

Economic Order Quantity: This policy is a comparison of the cost to buy versus the cost to hold in order to arrive at the most economical procurement quantity.

Use of Premium Transportation: This policy encourages the use of such transportation modes as air freight, sea express, and related surface systems in order to furnish materiel to the customer in less time. The mode of transportation is supposed to be cost-effective; savings in pipeline investment and other considerations should be greater than the increased costs of premium transportation.

Stratification of Secondary Items: The stratification process outlined in DoDI 4140.24 provides for the accumulation, extraction and display of basic supply data for the approximately 3.5 million secondary items in the defense supply systems in a manner that relates assets to requirements. By arranging the data in various formats, supply managers measure supply system status, prepare personal property reports to Congress, formulate procurement budgets, and make retention and transfer decisions. The requirements and assets are first stratified on an individual item basis, both quantitatively and by dollar value. The dollar value is then summarized in the different formats prescribed by materiel category (such as clothing, aviation components and parts, and subsistence) for such major operating subdivisions of the DoD supply systems as the various stock funds. Summaries of this information are used by ICP managers to prepare and review budgets and to exercise program control through financial inventory accounting.

Retention and Transfer of Materiel Assets: DoDI 4100.37 establishes DoD-wide policies for the retention and transfer of materiel. The Military Departments and Defense Agencies are required to establish specific levels for the retention and transfer of materiel. The policies may be summarized thus:

- Retention Policy: ICPs are authorized to retain materiel assets up to the sum of the Approved Force Acquisition Objective, the Approved Force Retention Level, Economic Retention Stock, and Contingency Retention Stock.

- Transfer Policy-Wholesale Stock: Transfer of assets applicable to the Approved Force Acquisition Objective is made on a reimbursable basis. In the case of

intra-DoD transfers within the Approved Force Acquisition Objective, each owning service must offer those on-hand assets exceeding the sum of its prepositioned war reserve, requisite on-hand and on-order peacetime supply levels, and current fiscal year net requirements, for transfer to another Service having a current fiscal year procurement requirement for any of these stock strata.

- Return Policy-Retail Stock: Subject to the exceptions listed in DoDD 4100.37, each holding activity is required to report to the wholesale manager any retail stock in excess of its retention level. Upon receiving information from the wholesale manager that an item is in a critical supply status, holding activities must report for reimbursable transfer any stock in excess of the sum of the approved prepositioned war reserve requirement and requisitioning objective.

Procurement Cycles and Safety Levels of Supply: DoDI 4140.39 establishes policy for determining procurement cycles and safety levels of supply for nonreparable secondary items at ICPs, and illustrates the basic mathematical functions and their application in an inventory model.

Grouping of Secondary Items: Secondary items are grouped uniformly in accordance with DoDI 4140.33. They are assigned Supply Management Group Designators and Supply Management Grouping Codes for management purposes. The Supply Management Group Designators group items by value of annual demand or planned issues, degree of management intensity (very high, high, medium, or low), or recoverability.

(b) Army

Levels of Responsibility: Each level of command is vested with certain responsibilities for inventory control and requirements as shown below:

- DARCOM: DARCOM is responsible for advancing selective management techniques throughout the Army logistics system.

- Other Major CONUS Commands: Other major CONUS commands are required to provide the Department of the Army and DARCOM with the management data required to determine stock positions and compute quantitative requirements for secondary items. The major commands are responsible for supply discipline, including the computation of requisitioning objectives for items stocked at retail level installations under their jurisdiction.

- Overseas Army Commands: Overseas commands are required to maintain, analyze, and provide to DARCOM the inventory management data necessary to determine stock positions and compute quantitative requirements for secondary items. Commanders compute and report separate requisitioning objectives for each item required, based on geographic location and separation of subordinate units. Base-level

requisitioning objectives for special management items are computed at the intermediate and direct support levels, and reported to the national ICPs.

Grouping of Secondary Items: Secondary items are grouped into segments to be selectively managed. The item groupings are based primarily on annual dollar value of demand or procurement with consideration of essentiality and criticality.

(c) Navy

Levels of Responsibility: The CNO has overall responsibility for directing the Navy's materiel programs. The Deputy CNO (Logistics) is primarily concerned with support equipment and materiel, such as equipment for support of ships, aircraft and facilities; repair parts; petroleum; oil and lubricants; and consumable material.

Determination of Requirements: Initial requirements for secondary items and repair parts are determined when a new major weapon or equipment is adopted by the Navy. During the manufacturing process, the ICP obtains from the manufacturer complete documentation on the parts comprising the basic weapon or equipment. Representatives of the ICP, the systems command procuring the major equipment, and the manufacturer meet in a provisioning conference and determine items and quantities necessary for initial support of the equipment.

ICPs prepare Allowance Parts Lists, containing the components and repair parts required to support individual equipments. ICPs also develop Coordinated Shipboard Allowance Lists for individual ships. Such Allowance Lists provide naval ships, craft, and other operating units with their repair part allowance and stockage objectives.

Special programs, such as the Standard Navy Maintenance Materiel Management System, supplement management of repair parts. Data on parts failures for naval weapons and equipments are collected and analyzed. This information is used to determine provisioning and procurement requirements, and to update allowance lists and replacement factors.

Two ICPs manage the majority of the secondary items and repair parts for which the Navy has supply responsibility, although management of certain items has been retained by others. Items are distributed as appropriate to their use and demand at supply centers, supply depots, shipyards, and air stations, the principal stocking points in the Navy distribution system. The Mobile Logistics Support Force, consisting of issue ships, tenders and repair ships, extends the distribution system to oversea fleets. These ships are, in effect, floating depots and repair shops deployed with the fleet.

Assignment to Inventory Manager: Items are assigned to the Naval Material Command inventory manager by the CNM on the principle of one inventory manager to one item of supply. Material systems commanders and project managers

manage less than 3% (about 22,000) of the line items, representing about 37% of the money value of the total Navy-managed inventory of equipments, components, and repair parts needed to support major end items and hardware systems. The vast majority (97% or 705,000 items) of Navy-controlled items are managed by the two major ICPs.

Program Support/Supply Support: Under a concept known as program support, a single ICP has responsibility for repair parts support for each assigned weapon system, subsystem, or equipment. The inventory manager carries out this responsibility by either arranging for specific item support from appropriate inventory managers (Navy-DSA-GSA), or by providing supply support for parts peculiar to end items falling within his commodity assignments. Thus, the material systems commander or project manager can look to an ICP for the support of his system or equipment. Supply support means that the ICP assigned responsibility for an item will stock that item in its segment of the stock distribution system for all requirements or programs, when the item is readily available from commercial sources or other government agencies.

ICPs therefore perform dual roles in program support/supply support; they are responsible for program support of an assigned equipment or component, and they provide single item supply support to equipments assigned to other ICPs for program support. Program support agreements are made among the materials systems commanders, the project managers, and the Commander, NAVSUP. Supply support agreements are made between ICPs with the approval of the Commander, NAVSUP.

(d) Marine Corps

Supply management is centralized at one ICP, the Marine Corps Supply Activity, Albany, Ga. Supply distribution is decentralized; materiel flows from procurement sources (commercial, GSA, DSA, other Service stocks) directly to the base where it will be consumed, or to the Marine Corps Supply Center supporting Fleet Marine Forces. Marine Corps Headquarters provides the Marine Corps Supply Activity with policy guidance, planning information, and special program information, such as scheduled recruit inputs upon which to base individual clothing forecasts.

The ICP operates the Marine Corps Unified Materiel Management System, which is the depot-level or stores portion of the total supply system. It handles provisioning, performs cataloging, computes requirements, redistributes, schedules maintenance, and disposes of excesses. The ICP receives appropriated funds for procurement of major components and secondary reparable items. Most secondary items, however, are funded by the Marine Corps Stock Fund, and are stocked according to the results of the provisioning process, or on the basis of sufficient demand during a specified period.

(e) Air Force

Levels of Responsibility: In the Air Force, secondary item and repair parts management is the responsibility of the item manager located at the ALC. The

standard management functions remain the same, regardless of the ranges, consumption rates, and complexity of the items. The actual number of items managed, however, varies, depending on the experience of the item manager, the detailed data applicable to each item's management, and other factors.

Headquarters, AFLC assigns item management responsibilities on the basis of federal supply groups and federal supply classes, and the item's functional relationship to particular weapon systems that may be supported. In some cases, items unique to the support of a particular weapon are consolidated into the weapon system under the system manager. Under this arrangement, the system manager is also the item manager for these particular items.

Determination of Requirements: Requirements determination management involves application of specified policies and procedures, and skillful analysis of demand experience. Requirements computations are essential in materiel management decisions.

There are two basic methods for computing requirements for consumption units. The first uses the economic order quantity computation. It is generally applicable to nonrecoverable items, those bits and pieces consumed in use, and presumes that future usage is best measured from past demands. The second is responsive to changing programs that generate increasing or decreasing usage trends. For reparable items, this method evaluates changes in programmed flying hours, missile checkout hours, base-months of operation, or other program-related factors.

The basic calculation for the second method estimates the projected operating requirements. This calculation is the sum of those quantities of items needed to maintain stock levels and repair cycle functions at base and depot-level activities. The sum of these calculations represents the total gross requirement. The gross requirement is then reduced by the total Air Force assets of that item, including inventory on hand, serviceable and unserviceable, and items due in from contractors. Additional calculations convert the net requirements position into a quantitative expression. The quantitative expression provides the basis for budgeting, procurement, repair, modification, determination of excesses, and final disposition of items.

(f) DSA

With the implementation of the Standard Automated Materiel Management System, essentially uniform supply management procedures are being applied to all DSA-managed commodities. The system is based on centralized accounting and management of assigned commodities at the six Defense Supply Centers.

Stocked items (as opposed to those bought only upon receipt of a requisition, or those decentralized for local purchase) are divided into two separate

categories for the purpose of forecasting requirements. Replenishment demand items are those in sufficient demand; their requirements are predicated upon historical demand. Other items are stocked only if considered sufficiently important to the operational requirements of customers, in which case they receive a special identification, and a minimal "insurance" quantity is maintained in stock.

The functional division between the Military Departments and DSA in this area is between requirements determination and requirements computation. The determination of requirements is the sole prerogative of the user, or the Military Departments, while the computation of requirements can be performed by either the supplier or DSA. DSA is responsible for computing replenishment requirements for those items it manages, and the Military Services are responsible for computing special programs and mobilization reserve requirements.

A double exponential smoothing technique is used to forecast recurring system requirements for replenishment demand items. Expected issue requirements are forecast monthly for very important program items and quarterly for all other items. Unusual requirements which cannot be extrapolated on the basis of past experience are forecast by the Military Service program manager, either as special program requirements or as provisioning requirements.

Replenishment of wholesale supply levels starts when assets reach the reorder point. Reordering has three distinct phases: administration, production, and delivery. Together they make up the procurement lead-time of an item. Because materiel is flowing from the system during the reordering process, the Defense Supply Center must have on hand sufficient materiel to support demands during procurement lead-time.

The sum of safety level, procurement lead-time, and the procurement cycle time is used to compute the supply levels necessary to provide continuous support to peacetime operations. The requirements developed from these three elements represent the maximum quantity that is normally required on hand and on order during peacetime. Variable safety levels are used for medium and high-dollar value, and for selected very important program items. New items and low value items are assigned fixed safety levels, normally 60 days.

2. Retail Supply Management

This section describes the retail-level supply management systems of the four Services. It presents the management options, and the types of organizations used to perform this logistics function.

(a) Army

The supply operations of retail-level installations are based on two principles. Items stocked must be directed toward attaining maximum materiel readiness of supported units. Stockage criteria must be based on demand and/or item essentiality.

Levels of Responsibility: Retail-level installation commanders are responsible for the efficiency of installation supply activities, and for the support of all individuals, units, and activities assigned to, or under its jurisdiction, unless exempted by higher authority. Each retail-level installation has a Director of Industrial Operations, who is principal staff assistant to the installation commander for supply matters and who exercises staff supervision and logistics operations.

Although there is no standard organizational structure for all installations, installation supply responsibilities are usually vested in a single individual reporting directly to the Director of Industrial Operations. Normally designated the director or chief of supply, this individual provides supply support to units and activities located at the installation, and to approved off-post or satellite organizations. These operations are conducted primarily through an Installation Supply Division.

The Installation Supply Officer supervises the Installation Supply Division, and ensures that formal records of accountability are maintained. He supervises the activities of the Stock Control Branch, the materiel category managers who control assigned materiel categories of property and equipment, the Storage Branch, and the Self-Service Supply Center.

Stock Control: Each supply echelon is restricted to stockage of those items requisitioned a specified number of times during the latest 12-month period and necessary for demand accommodation. Items meeting these criteria are entered on the authorized stockage list of the supply activity. Only items appearing on this list are stocked, the objective being an average demand accommodation of 80%. All other items are requisitioned from the next higher supply echelon.

For accounting purposes, property is classified as real or personal. Personal property is further subdivided into ten classes of supply: subsistence, secondary items, fuels, construction materials, munitions, personal support items, major end items, medical materiel, repair parts, and nonmilitary support materiel. Secondary items and repair parts constitute the largest portion of all supply items, and represent the primary concern of retail-level supply managers. They usually are procured with Army Stock Funds; however, some secondary items and repair parts are appropriation-funded, and issued without charge. Major end items generally are nonstockage items, and are requisitioned by retail-level installations to fulfill requirements stated in authorization documents.

Stockage at unit level consists of the items in Prescribed Load Lists, i.e., items used in organizational maintenance and items qualified for stockage under frequency of use criteria. Excluded are those items available from Quick Supply Stores. There are many items for which demand data are not sufficient to allow stockage at the installation. Such items, sometimes authorized as allowances for units, are called "nonstockage items."

The Army uses three different stockage concepts: economic inventory policy, noneconomic inventory policy, and economic order quantity. The economic inventory policy consists of three principles: economic stockage, economic order, and variable safety level. Under the noneconomic inventory policy, requisitioning objectives are based upon a fixed amount, in terms of days, of supplies which may be on hand or on order at any one time. This policy applies to those direct and general support-type units and installations not authorized to use economic inventory policy procedures. The economic order quantity concept is used to compute replenishment orders, and relates the cost of ordering to the cost of the item.

Overseas Areas: Under current Department of the Army doctrine, overseas supply activities are organized to meet the needs of the assigned forces. Each theater of operations has a component Army commander who commands all Army activities in the theater. The Theater Army Headquarters accomplishes its supply management responsibilities through its materiel management center, using data which interface with the wholesale systems in use in CONUS, and those of subordinate materiel management centers.

The Theater Army Area Command provides direct and general supply support to noncorps units, joint elements, allied forces, and units passing through the communications zone. In addition, the Command provides storage and maintenance facilities for materiel held as prepositioned war reserves. General support units of the Theater Army Area Command provide backup supply and maintenance for the corps, when directed by the theater army.

The Corps Support Command provides combat service support for the corps force. Its direct and general support units provide supply support to nondivisional units within the corps zone, and backup general support to divisional elements. The size and composition of units of the Corps Support Command are not fixed; each may be tailored to the size of the supported force and the workload.

Except for items controlled by the theater army, requisitions flow from the direct or general support units to the materiel management center of the Corps Support Command, and to the wholesale system in CONUS (DARCOM, DSA, GSA, etc.). Requisitions from units of the Theater Army Area Command are passed from direct and

general support units, through the materiel management center of the Theater Army Area Command, to the wholesale system. For those items designated by the theater army for intensive management and allocation, requisitions are routed through the theater army materiel management center.

Supplies shipped from CONUS are routed by air or sea directly to the direct and general support units of the Theater Army Area Command, with throughput extending to divisional and non-divisional direct support units whenever possible. The materiel management center and the movement control center provide the coordinated management capability for controlling this flow.

The material management center is a composite organization operating directly under the control of the theater army or corps support command. The materiel management center provides overall stock management for all theater supplies. This responsibility includes: computing requirements, requesting supplies for supporting communication zone units, managing the Army supply distribution systems, and monitoring stock levels.

The Division Support Commands are major divisional support units functionally organized for logistical support. The supply, transportation, and maintenance elements of a command vary according to the type of division or divisions supported. The support includes: storage and distribution of subsistence and secondary items, fuels and repair parts; control of ammunition; and direct support maintenance and backup organizational maintenance support for all non-medical divisional units. Supply and maintenance support are furnished on an area, task, or unit basis. Normally, command elements employ a combination of unit and area support, with unit support as the foundation.

(b) Navy

Customers: Navy suppliers have two groups of customers, fleet and shore. The fleet customers are active ships, ranging from aircraft carriers to river patrol boats. The varied characteristics of these ships create various supply requirements, requiring differing degrees of attention. The naval shore activities in CONUS and overseas, which serve as operating and repair bases for fleet ships and aircraft, make up the second group of customers. They are of many types and sizes, including shipyards, ammunition depots, air stations, and hospitals.

Mobile Logistics Support Forces: Repair ships, ammunition ships, oilers, stores ships, fast combatant support ships, and food supply ships compose the Mobile Logistics Support Forces, which replenish seagoing combat forces and carry cargoes of items tailored to the forces they support. An individual ship relies for supply support primarily on the Mobile Logistics Support Forces ships in its particular task force or fleet.

These mobile logistics support ships are intended to keep combatant ships on stations for extended periods by means of transfer at sea (underway replenishment). The range and depth of the materiel they carry are prescribed by load lists. Ships of the Mobile Logistics Support Forces rely primarily on CONUS stock points for replenishment. When this is not practicable, the ships requisition supplies from CONUS stock points, which furnish materiel to the Mobile Logistics Support Force for direct transfer from a resupply ship, or, if necessary, via an overseas base.

Stockage Points: Materiel is stocked in three overseas supply depots: Yokosuka, Subic Bay, and Guam. Such materiel is tailored for the support of both fleet units and shore facilities in the immediate area.

The major CONUS stock points include: naval supply centers, naval ammunition depots, naval weapons stations, naval shipyards, naval and Marine air stations, construction battalion centers, and naval fuel depots. From these activities, materiel moves to the operating forces, either directly or through the Mobile Logistics Support Forces and the overseas bases. The major stock points receive most of their materiel directly from commercial sources through local purchase or contract, or by requisitioning from DSA, or GSA.

Ships operating off CONUS normally requisition from the nearest stock point. Forces positioned in the Sixth or Seventh Fleet obtain as many supplies as possible from Mobile Logistics Support Forces, with minimum direct dependence upon overseas bases. In general, deployed combatants are replenished at various intervals depending upon the item concerned.

(c) Marine Corps

Supporting Establishment: Supply management within the supporting establishment is carried out in accordance with policies and procedures promulgated by Marine Corps Headquarters. Each activity within the supporting establishment maintains a local procurement capability. The normal source of supply for the supporting establishment is through Interservice Supply Support Agreements (ISSAs), and through procurement from GSA, DSA, or local sources. Stock level guidance is provided by Marine Corps Headquarters.

At the larger bases, where tenant Fleet Marine Force activities are normally located, the base operates a direct support stock control function for the ICP. The stocks belong to, and are under the technical control of, the ICP, and the direct support stock control subsystem operates as a subsystem in the Marine Corps Unified Materiel Management System. The direct support stock control system is primarily responsible for providing supply support to using units.

Fleet Marine Force: The Fleet Marine Forces are the combat elements of the Marine Corps. Designed to be self-supporting in supply matters, they have integral service units for this purpose. Mobile data processing platoons support the service units.

Service units submit requisitions to the single Marine Corps ICP at the Marine Corps Supply Activity, Albany, Ga., or to the integrated materiel manager for non-Marine Corps-managed items. The Fleet Marine Forces can obtain common supplies by ISSAs or by commercial purchase and lease where appropriate.

Organic Supply: Each Marine Air Group, Battalion, Squadron, Company, or Battery has a property account, and is administered as a supply element. Requisitioning, controlling, accounting, and disposing of materiel are accomplished at the unit supply level. Materiel required by subordinate units is reflected on property records and custody records prepared and maintained by the supply element.

(d) **Air Force**

Base Supply: Air Force bases have a system of supply that furnishes logistical support for all units assigned to the base. Responsibility for establishing and maintaining this system rests with the base or wing commander. To assist him in carrying out his program, the commander designates a deputy commander for logistics, and a chief of supply, who monitor and direct the base logistical program. The chief of supply's office is the base focal point for the retail-level supply system, and provides all authorized assets to base customers.

As the accountable officer, the chief of supply manages the supply division complex, and provides technical assistance and guidance on supply matters to all duties supported. His duties include the requisitioning, receipt, storage, issue, safeguarding, reporting, and disposition of all base supplies and equipment. The major operating functions of the chief of supply are organized into six branches: (1) Management and Procedures, (2) Materiel Facilities, (3) Supplies Management, (4) Equipment Management, (5) Item Accounting, and (6) Fuels Management.

Air Force Standard Base Supply System: The Standard Base Supply System is an automated inventory accounting and control system, designed to provide supply support to base-level activities. The system utilizes a second generation computer for storing and maintaining records, and for generating management reports. The Air Force Standard Base Supply System is intended to be compatible with all DoD standard military systems, and to use their data element codes and standard forms where applicable. Management of supplies and equipment at each base, together with the related functions of financial accounting, are likewise interfaced and operated in line with the computer.

The standard system uses remote input-output devices on line with a central processor. All item and financial information is internally stored, and inputs to the system are randomly processed as they occur. The computer system automatically adjusts inventory balances, accumulates transaction data, back-orders issue requests, releases back orders, etc.

Stock Control: The AFLC, through its ALCs (depots), buys and distributes centrally-procured items of supply used on weapon systems. Each depot buys and stocks items in designated federal supply classes, and serves as a primary source of supply for Air Force bases. (Centrally-procured items which are budgeted and paid for by the AFLC are provided free to the Air Force bases.)

Items financed by the Systems Support Division of the Air Force Stock Fund are provided free to Air Force bases, but their management is controlled by intra-service fund transfers processed by AFLC. Bases also use DSA, GSA, and other Military Services as sources of supply.

REPORTING, ACCOUNTING, AND BUDGETING

During the last 20 years, DoD has increasingly used commercial-type practices in supply and financial management. Public Law 216, a part of the 1949 amendment to the National Security Act of 1947, initiated this trend. Provisions of the Act state that "property records will be maintained on both a quantitative and dollar basis under such directives as shall be issued by the Department of Defense."

Following enactment of Public Law 216, a DoD memorandum to the Military Departments stated that "as a minimum, supply accounting at depots, camps, and stations will be developed to achieve integration of financial accounting." The intent was for financial management systems to parallel item management systems. Although each Service designed its own procedures, the procedures all had the common characteristic of collecting data necessary to enable managers at all echelons to manage their supply functions more efficiently.

1. Principles of Financial Inventory Accounting

The Military Services use systems known as financial inventory accounting, in which cost data as well as item data are accumulated. Since cost information, if accumulated on an item-by-item basis, offers no advantage over item accounting, financial inventory accounting techniques aggregate related items into groups for management purposes. The dollar value of each group is then used to note increases within a group, or to compare one group with another.

Stratification and Use of Data: The financial inventory accounting reports and summaries are used to study the adequacy of assets relative to requirements, and to scrutinize action being taken to obtain materiel for unfilled orders, as specified under

DoDI 4140.24. The report from each agency (i.e., the Military Departments and DSA) to OSD is accompanied by a comprehensive analysis, including a statement of highlights, an explanation of any deficiencies or abnormal ratios, and the corrective action taken. Current reports are compared with previous reports to determine trends. This information is used to channel procurement funds into the proper commodity areas.

On financial reports, asset values are stratified into assets applicable to peacetime, and to mobilization requirements. Funds for procurement of mobilization stocks are annotated, and not used for other purposes without prior approval from the source which originally made the funds available; the values of stocks purchased by these funds are accounted for separately. By examining financial inventory accounting reports, higher headquarters can observe the responsiveness of supply managers to policy directives dealing with mobilization needs.

Stock Fund Concept: Although the Navy Department created the first military stock funds in 1878, current practices are an outgrowth of Public Law 216. The concept of governmental stock funding parallels commercial business practices. When commercial wholesalers sell a portion of their stock to retailers, the wholesalers then use funds from these sales to purchase additional stocks from manufacturers. This method of buying and selling represents a basic governmental approach, identified as horizontal stock funding.

A second method is also practiced. Often a commercial wholesaler will find it expedient to place some of his stock on consignment in the warehouses of retailers. Such stocks are available to the retailer for sale to his customers, yet the wholesaler retains ownership and control until the sale is consummated. This approach is identified in government parlance as vertical stock funding.

The price a customer pays a wholesale stock fund for an item is the standard price, determined by adding a stock fund surcharge to the cost of the item. The price paid to a retail stock fund by the ultimate user is also the standard price. Catalogue data provide stock fund customers with standard prices. These are used in funding requisitions for materiel, and in developing budgets and programs.

In financial jargon, a stock fund is called a revolving fund. When the value of sales reaches the value of inventory, the fund is said to have gone through one turn, or revolution. Military stock funds normally make two or three turns per year.

The Office of Management and Budget (OMB) controls the operations of most military stock funds. Some fund managers must obtain obligation authority before ordering replenishment stocks, even though funds to finance replenishment are available from sales. Other military stock managers are no longer required to obtain obligation authority; OMB has exempted commodities, such as food in commissaries and uniforms in clothing stores.

Materiel to be supplied by sale from stock funds must consist of items lending themselves to this management technique. Because operating funds are derived from sales, items must be in sufficient demand to preclude dormant inventories. Stock-funded materiel should also be primarily expense-type items that are offered for sale.

2. Army

The Army uses financial inventory accounting to integrate quantitative and monetary data for all inventories in the Army supply system worldwide. Related items are grouped together into three principal classes: (1) Major Items (end items), (2) Repair Parts (appropriation funded), (3) Secondary Items (funded by stock funds). The total value of Army supply system inventories and military equipment in use in June 1974 was estimated at \$29.7 billion, including \$2.4 billion of assets financed by the Army Stock Fund, and \$27.3 billion of appropriation-funded inventories.

DARCOM operates the only wholesale division within the Army. It is subdivided among the commodity commands, and each subdivision (called Subhouse Office) procures and maintains inventories of assigned stock-funded items. As a wholesaler, DARCOM buys from manufacturers and sells to retail stock funds and other customers.

A second operating division of the Army Stock Fund is the DARCOM Installation Division, a retail stock fund that buys supplies for DARCOM-operated installations, the Army Security Agency, the U. S. Army Communications Command and the Health Services Command.

A third operating division is the Defense Supply Service Division, a retail stock fund that purchases and sells supplies needed by agencies in the Washington, D. C. area. It is often called the Pentagon Stock Fund Division. The remaining five divisions are retail funds known as Command Channel Stock Funds because they are controlled through command channels.

3. Navy

The Commander, NAVSUP, administers and manages the Navy Stock Fund. Inventory management is exercised through ICPs performing supply and financial management of the specific categories of Navy materiel financed by the fund. The Navy Retail Office at the Fleet Material Supply Office is assigned responsibility for exercising financial control over the Navy Stock Fund materiel managed on a decentralized basis at retail stock points. Approximately 90% of the line items stocked by the Navy, representing 13% of the total value of Navy materiel held in inventory, is funded by the Navy Stock Fund.

Inventories of materiel financed by the Navy Stock Fund were valued at \$1.4 billion as of June 1974. Among stratified stocks, acquisition and retention assets

retained in support of approved forces account for \$836 million; other retention stocks amount to \$273 million, with \$261 million in the potential DoD excess stratum.

Navy Stock Fund operations are not confined to land-based storage depots, for the fund also prepositions materiel on supply ships at sea. Like any other customer, a ship commander wanting to buy materiel from a supply ship at sea or in port must have consumer funds with which to reimburse the stock fund.

4. Marine Corps

The Marine Corps likewise maintains a financial inventory accounting system. The dollar value of inventory carried in the Marine Corps Supply System, both stock fund and non-stock fund, is recorded in financial ledger accounts maintained at the ICP. The total dollar value of the items in the supply system, as recorded system-wide, is shown by materiel category within geographical location.

The value of materiel in the Marine Corps supply system as of 30 June 1974 totaled nearly \$2.2 billion, an increase of approximately \$41 million during FY 1974. Table 4 shows the Marine Corps stratification of inventories.

TABLE 4. MARINE CORPS STRATIFICATION OF INVENTORIES

(In millions of dollars as of June 30, 1974)

Stratified Stocks:

Approved Force Acquisition	\$1,544
Approved Force Retention	176
Economic Retention	206
Contingency Retention	51
Potential DoD Excess	120
Total Stratified Stocks:	2,097
Unstratified Stocks	89
Total Stocks	\$2,186

The Marine Corps Stock Fund: Eight chartered materiel categories are managed by the fund: Ordnance-Tank-Automotive, Engineer Supplies and Construction Materiel, General Property, Communications-Electronic-Electric, Clothing and Textiles, Fuel, Subsistence, and Commissary Stores. The Marine Corps Stock Fund includes

approximately 234,500 line items, representing about 95% of all the materiel stocked by the Corps. Table 5 indicates the scope of Marine Corps stock funding, by materiel categories.

TABLE 5. MARINE CORPS STOCK FUND MATERIEL CATEGORIES

<u>Category</u>	<u>Number of Line Items</u>
General Property	83,774
Communications-Electronic-Electric	73,557
Ordnance-Tank-Automotive	30,712
Engineer Supplies and Construction Materiel	37,063
Clothing, Textiles, Subsistence, Fuel, and Commissary Stores	<u>9,373</u>
Total	234,479

Fiscal transactions between the customer and the stock fund are effected at the ICP, Albany, Ga., based on transaction reporting from the issuing base.

5. Air Force

The Air Force financial inventory accounting system extends to the base level. It applies only to inventories maintained, managed, and controlled by formal accountable officers at the base level (Base Supply Officers), at the ICP level (the ALCs), and at the AFLC level.

As of June 30, 1974, Air Force Supply System inventories were valued at slightly more than \$13.8 billion. Approximately 12%, or \$1.8 billion of total supply system inventories were financed by the Air Force Stock Fund. Table 6 shows the Air Force stratification of inventory in millions of dollars, as of June 30, 1974.

The Air Force Stock Fund: The Air Force Stock Fund consists of seven divisions: (1) Clothing Store, (2) Commissary, (3) Fuels, (4) Air Force Academy Cadet Store, (5) Medical-Dental, (6) Systems Support, and (7) General Support. Table 7 gives the number of line items by Air Force Stock Fund, and the dollar value of inventory and sales for FY 1974.

Overall direction of the stock fund is vested in Headquarters, Air Force. Below this level are the AFLC and the Air Force Academy. The AFLC is the division manager for the Clothing Store, Commissary, Fuels, General Support, and Systems Support Divisions. The Cadet Store Division is managed by the Academy, and the Medical-Dental Division by the Air Force Surgeon General.

**TABLE 6. AIR FORCE STRATIFICATION
OF INVENTORIES**

(In millions of dollars, June 30, 1974)

Stratified Stocks:

Approved Force Acquisition	\$ 9,543
Approved Force Retention	0
Economic Retention	1,823
Contingency Retention	1,495
Potential DoD Excess	889
Total Stratified Stocks:	13,750
Unstratified Stocks	80
Total Stocks	\$13,830

TABLE 7. AIR FORCE STOCK FUND, FY 1974

<u>Division</u>	<u>No Line Items</u>	<u>\$Value Inv. (Millions)</u>	<u>\$Sales (Millions)</u>
Clothing Store	2,200	\$ 12.7	\$ 41.6
Commissary	4,200	102.3	1,174.8
Fuels	100	240.4	990.4
Air Academy Cadet Store	10,000	2.7	4.4
Medical - Dental	15,000	20.6	67.3
General Support	888,000	242.8	825.4
Systems Support	443,000	1,189.0	484.1
Total	1,362,500	\$1,810.5	\$3,588.0

Five divisions of the Air Force Stock Fund are exempted from the OMB apportionment process. The General Support Division and the Systems Support Division are not, being still subject to the OMB apportionment process, as are DSA (Defense Stock Fund), Army Stock Fund, and Navy Stock Fund.

6. DSA

Financial inventory and item accounting for DSA supply system inventories is centralized at each ICP, except for perishable subsistence and base operating supplies, which are decentralized. DSA uses the Defense Stock Fund to finance procurement of all applicable supplies. Financial accounting for all inventories and inventory transactions is accomplished through procedures that are part of the stock fund system.

Inventories financed by the Defense Stock Fund were valued at \$3,393 million as of June 30, 1974, an increase of \$893 million during the year, as compared with an increase of \$188 million in FY 1973 over FY 1972. Table 8 shows the stratification of DSA stocks as of June 30, 1974.

TABLE 8. DSA STRATIFICATION OF INVENTORIES

(In millions of dollars as of June 30, 1974)

Stratified Stocks:

Approved Force Retention	\$1,397
Protectable Mobilization Acquisition	1,133
Economic Retention	475
Potential DoD Excess	258
Total Stratified Stocks:	3,263
Unstratified Stocks	130
Total Stocks	\$3,393

Inventory management is exercised through Defense Supply Centers, which, as integral parts of DSA, perform supply and financial management of specific categories or commodities of materiel financed by the Defense Stock Fund. Stock fund statements, together with supporting schedules and a comprehensive analysis, are prepared by each Defense Supply Center and transmitted to DSA Headquarters. Headquarters summarizes, reviews, and analyzes the data, and furnishes DoD with stock fund reports reflecting agency-wide inventory data, in accordance with the provisions of DoDI 7420.11, "Chart of Accounts and Financial Reports for DoD Stock Funds."

The Defense Stock Fund: The Defense Stock Fund is used to finance procurement of supplies and materials for resale to other defense and government agencies. Items purchased and held by the Defense Stock Fund are wholesale stocks. The individual Military Service (customer) uses its own funds to obtain the materials.

Defense Stock Fund obligational (procurement) authority is apportioned by OMB to Headquarters DSA. In turn, an amount is allotted to DSA centers, which sub-allot, in varying degrees, to depots within the distribution system.

DSA is the consolidated wholesaler for assigned items of supply, and it distributes to the depot level in CONUS. It supports Air Force bases worldwide as that Service has requested. Each Military Service determines its own requirements; DSA in turn computes the total quantitative requirements, procures supplies from commercial sources, and sells to the Military Services at cost plus a surcharge for transportation and normal operating losses. DSA also arranges transportation for initial distribution of stocks from suppliers to point of storage, and from point of wholesale storage directly to the consumer; and for redistribution between wholesale storage points.

7. GSA

The stock fund of FSS is the portion of the General Supply Fund which is allocated to supply operations. The General Supply Fund is a revolving fund, financing on a reimbursable basis: a national supply distribution system, a system for ordering supplies for direct delivery to agencies, and a system of interagency motor pools to serve areas of high vehicle density. The capital of the fund, which is increased both by appropriations and by transfer from agencies, was \$398.7 million as of June 30, 1973. Of the total, \$239 million is allocated to supply operations. This discussion is limited to that portion of the fund.

A Supply Operations Plan submitted quarterly by each region provides the basis for developing overall national and regional planning and control of stores inventory. Plans are prepared in the middle month of the quarter and submitted to the Central Office. These planning documents contain essential financial inventory accounting data for inventory factors, such as sales-on-hand inventories, receipts, replenishments, transfers, losses, etc.

Each regional plan is extensively reviewed by the Central Office, and questioned or amended if necessary. Approved regional plans are consolidated into a National Supply Operations Plan. After approval by the Commissioner, Federal Supply Systems, regional plans are returned to the applicable region to provide obligation authority necessary to implement the plan.

CHAPTER THREE: MAINTENANCE

SCOPE AND TRENDS

This chapter deals with maintenance activity and management for weapons and equipment end items. DoDD 5126.22 assigns overall responsibility for policy guidance and maintenance management to ASD(I&L) who, in turn, operates through DASD(SM&S) and his Directorate for Maintenance Policy. The OSD designation of a Deputy Assistant Secretary with responsibilities encompassing both supply and maintenance reflects the interdependence of these activities. Maintenance supplements supply and procurement by extending the serviceable life of weapons and equipment end items, while supply complements maintenance by providing necessary assemblies, repair parts, and materials.

The magnitude of maintenance activity is related to the inventory value of weapons and equipment held by the various DoD Components. The value of assets held, their complexity, age distribution, and usage rates determine maintenance requirements to ensure the operational readiness and mission capability of weapon systems and equipment items.

The comparative values of weapons systems and equipment end items inventories at original acquisition costs are listed in Table 9.

**TABLE 9. INVENTORY OF WEAPONS AND OTHER
MILITARY EQUIPMENT IN USE AS OF 30 JUNE 1975**

(Millions of dollars)

Arm	\$ 15,578
Navy & Marine Corps	58,150
<u>Air Force</u>	<u>41,797</u>
Total DoD	\$115,523

The values in Table 9 do not reflect current replacement costs for these systems, or costs for major modifications to improve operational capability. Conservative estimates on this basis place inventory value at over several hundred billion dollars. The data in Table 9 also do not reflect the inventory of war reserve equipment in the supply system, which is quite large in the Army. War reserves of end item equipment are not explicitly stockpiled by the other Services, but are implicit in the maintenance requirements for weapons system inventories.

Estimates of aggregate maintenance costs incurred throughout DoD are not directly available. Visibility of these costs is obscured by the several Congressional budget categories that fund maintenance activity, and the current inability of the Services to associate resources to activities at the various echelons. This situation has promise of changing in the Air Force, where a new Standard Base Level Maintenance Cost System has recently been implemented.

The Office of the Director, Planning and Evaluation, OASD(I&L), does prepare estimates of maintenance costs in connection with the Logistics Issues Paper during the Program Objectives Memorandum (POM) Review. A breakdown of costs from this source is provided in Table 10 below.

**TABLE 10. P&E ESTIMATE OF LOGISTICS RESOURCES
FOR MAINTENANCE FY 1976**

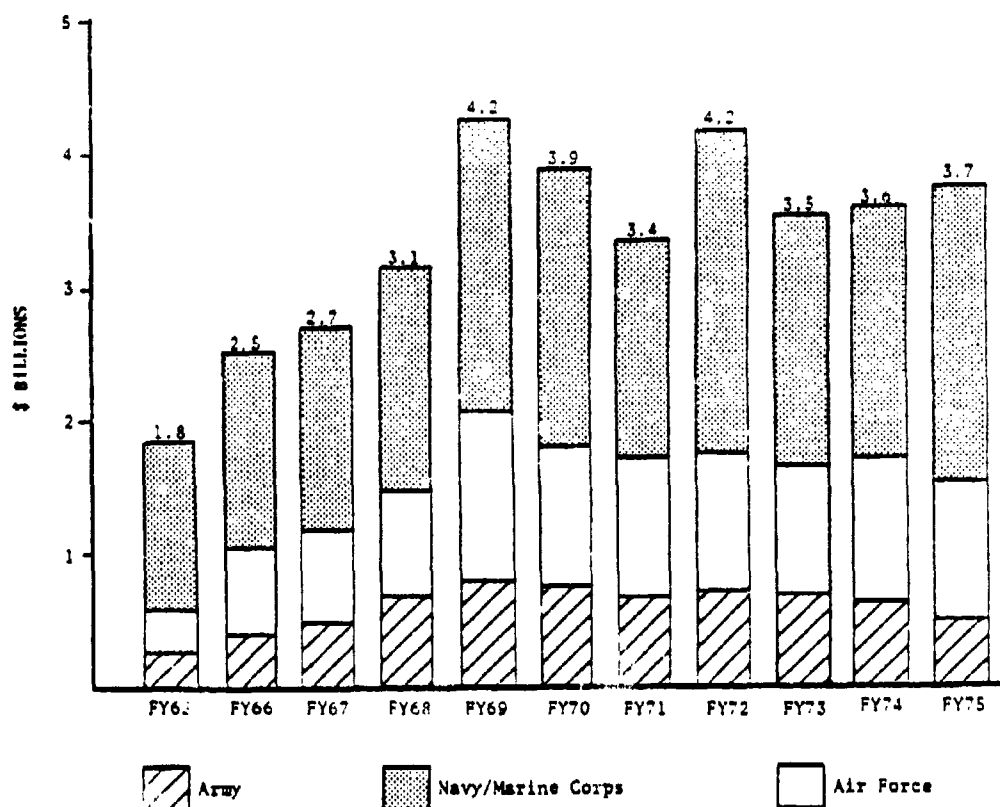
(\$Billion)

Shipyards	2.0
Other Depot except Repair of Spares	5.2
Intermediate (includes inter- mediate/base repair of spares)	2.3
Organizational	2.6
<u>Depot Repair of Spares</u>	<u>1.0</u>
Total	13.1

The \$13.1 billion estimated is based upon gross approximations of intermediate and organization costs. It includes costs funded by both operating and maintenance (O&M) and Military Personnel Appropriations, and covers organic, as well as contractor-performed maintenance. Resources for procurement of modifications, kits, packages and materiel are excluded, while contractor-performed alterations and those performed at organic facilities that are not separately broken out by the Services are included in this total. These data do not provide for attribution of capital costs of government-owned facilities and equipment to maintenance performed at organic facilities. The cost of contractor-provided services does, of course, implicitly include charges for capital (facilities and equipment).

Another source of information on maintenance expenditures is available from the Five Year Defense Program (FYDP) accounting structure. Those data provide historic O&M appropriation expenditures for depot maintenance activity by Service. Figure 10 shows the aggregate historic level and composition of funding for O&M-financed depot maintenance services from organic and contract providers, among the Services.

FIGURE 10. DOD DEPOT MAINTENANCE FUNDING



- ARMY

72207A Depot Maintenance (Non IF)
 79017A Maintenance Support Activities

- NAVY

Acft: 72207N Depot Maintenance (Non-IF)
 Ships: 72028N Ship Maintenance Activities (IF)
 72228N Ship Maintenance Activities (Non-IF)
 USMC: 72207M Depot Maintenance (Non-IF)

- AIR FORCE

72207F Depot Maintenance (Non-IF)

ORGANIZATION AND RESPONSIBILITIES

1. OSD

The ASD(I&L) is charged with overall responsibility for maintenance in DoD. In particular, this functional responsibility consists of establishing policies and support for operation and monitoring of management and control of all DoD maintenance activities. Three levels of maintenance have been designed by ASD(I&L), and the definition of responsibilities undertaken at each level has been delegated to each Military Service. The three levels of maintenance defined by DoDD 4151.16 are:

- Organizational, consisting of inspection and service of assigned equipment by the unit or organization using it
- Intermediate, consisting of calibration, repair, and replacement of components; manufacture of non-available parts; and technical assistance to users or user organizations
- Depot, consisting of inspection, test, repair, modification, overhaul, conversion of parts, components, subassemblies, weapon systems or equipment end items; manufacture of parts; and provision of technical assistance to lower echelons. Depot maintenance is usually undertaken at fixed organic or contract facilities.

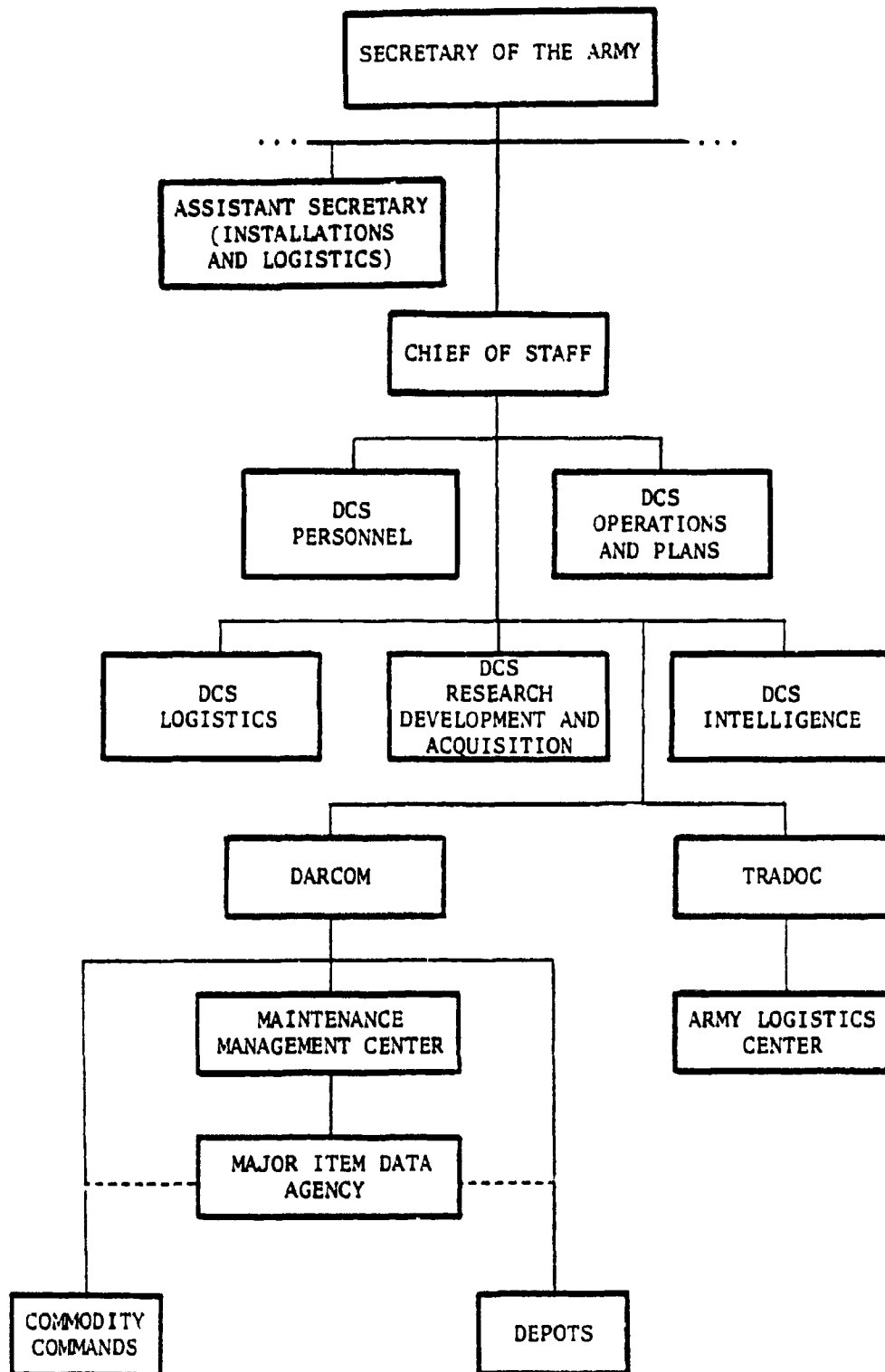
Each Service has evolved unique organizational structures within the three-level concept and other ASD(I&L) policy guidelines. A brief description of these organizational structures and their responsibilities is presented below for each Service.

2. Army

Army maintenance management begins in the Office of the Secretary of the Army. His subordinate, the Assistant Secretary of the Army for Installations and Logistics, is charged with formulating logistics guidance. Staff-level responsibility for Army maintenance is assigned to the Deputy Chief of Staff for Logistics (DCS (Logistics)). Below Department of the Army level, DARCOM is responsible for depot maintenance, ICPs, and administration of research and development programs. Finally, maintenance production is included in mission assignments for all Army major commands. Figure 11 depicts the major centers of activity for maintenance management and production within the Army.

DCS (Logistics): This office has overall staff responsibility for Army maintenance and conducts three basic types of activities: structuring basic policies and objectives for materiel maintenance throughout the Army; formulating maintenance information systems; and supervising the management of such systems. Other Army

FIGURE 11. ARMY MAINTENANCE



General Staff elements are responsible for ensuring the availability of trained maintenance personnel, and for the development of tables of organization and equipment needed for below-depot maintenance.

Training and Doctrine Command (TRADOC): This Command develops doctrine for field maintenance operations, and provides training for maintenance skills at training centers and service schools. TRADOC also defines the types of maintenance to be performed by particular units, and develops the skill and personnel requirements associated with the activities assigned. Within TRADOC, the Army Logistics Center is responsible for the maintenance of organizational and intermediate levels of the Army Maintenance Management Systems.

DARCOM: This Command manages wholesale level maintenance by developing requirements and production planning of depot maintenance programs for assigned equipment. Within DARCOM are seven major subordinate commands (Commodity Commands), depots performing wholesale supply and maintenance operations, and a coordinating agency - the Major Item Data Agency (MIDA). The Commodity Commands are charged with managing all aspects of integrated commodity management, including planning, depot maintenance, conducting research, and administering procurement for their assigned commodities. The depots are specialized as to the types of materiel maintained (although every end item, system or component is assigned a secondary source of maintenance), and are responsible for the production of depot maintenance. The line of responsibility is directed to DARCOM, with MIDA acting as a buffer (control point) to integrate the Commodity Commands and Depots. MIDA coordinates the execution of depot maintenance programs, assigns workloads, and acts as fiscal agent for the depots.

Installations are organized to perform logistics responsibilities, although there are some exceptions. Most logistics functions are performed under the staff supervision of the Directorate of Industrial Operations (DIO) at each installation.

DIO: This Directorate consists of functionalized staffs and operating elements, which provide logistics support and services directly to recipients. DIO personnel operate directly with national ICPs, depots, and military and civilian supply, maintenance, services, and transportation agencies to obtain required logistic support. Specific functions include: programming and budgeting, procuring materiel, retail supply, and direct and general support maintenance.

The Chief of the Maintenance Division operates the installation maintenance office, and is responsible to the DIO for all maintenance on the installation, except medical operations. He is also responsible for organizational maintenance of equipment belonging to the Director, Facilities Engineering.

A direct exchange activity which exchanges components needing repair on a one-for-one basis, is normally located in or adjacent to the installation's maintenance activity. The responsibility for this activity is assigned to the accountable property or supply officer rather than the maintenance officer.

3. Navy and Marine Corps

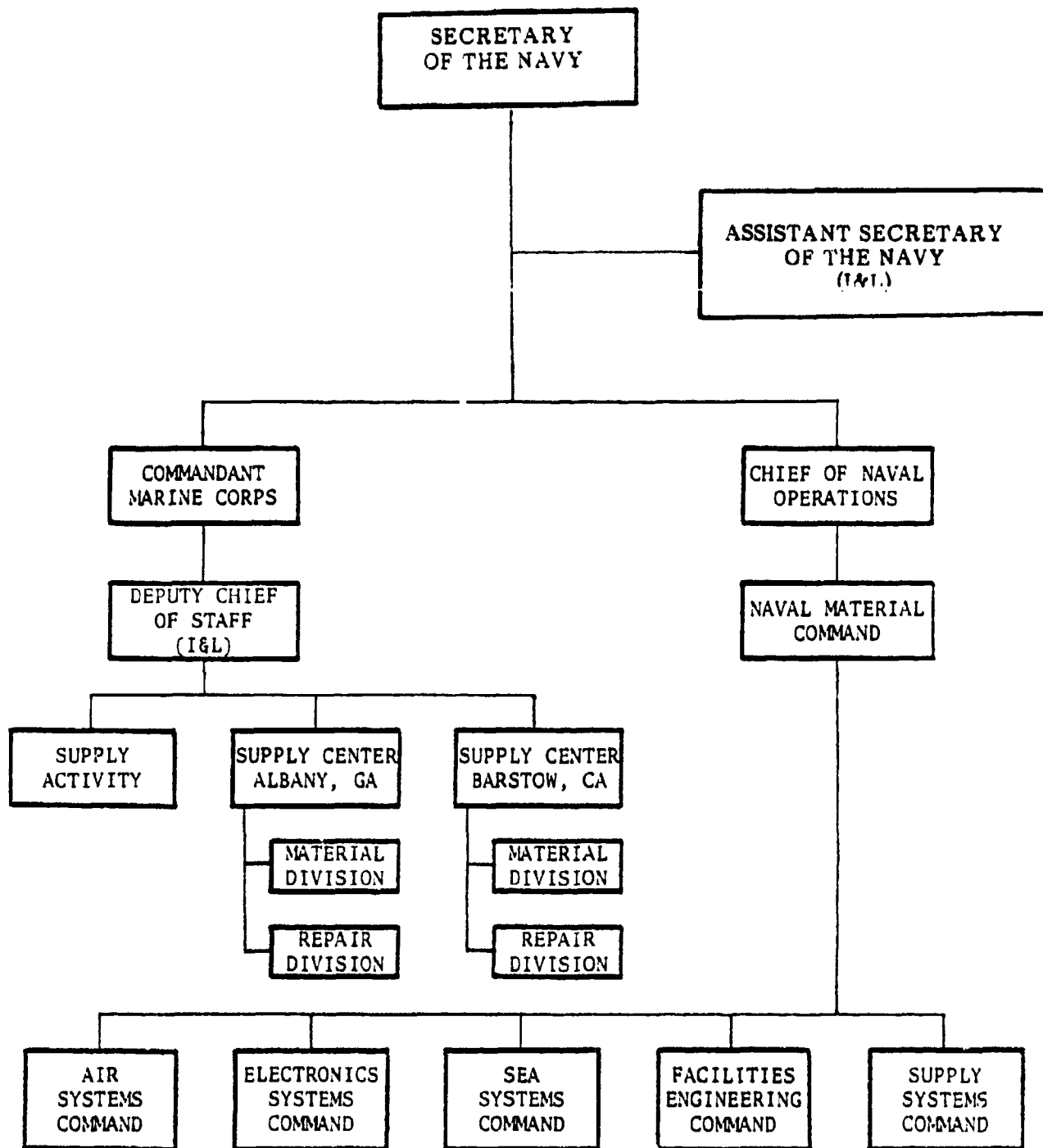
Top-level maintenance management and production authorities in the Navy and Marine Corps include: the ASN(I&L), CNO, CNM, the Commandant of the Marine Corps and his DCS(I&L). Most maintenance responsibilities in the Navy reside with the CNM, who controls depot maintenance, provides technical guidance to organizational and intermediate levels and monitors the execution of maintenance policy. The Naval Material Command consists of a central headquarters staff and five systems commands, four organized by hardware categories and a fifth responsible for supply support and scheduling of secondary item maintenance.

The Marine Corps maintenance organization is composed of a Material Division headed by a DCS(I&L), two Marine Corps Supply Centers and a Marine Corps Supply Activity (ICP). An overview of the structure and organization of maintenance in the Navy and Marine Corps is presented in Figure 12. The assigned responsibilities of each organization for maintenance management and production are described briefly below.

The ASN(I&L) is responsible for all aspects of procurement, supply, distribution and maintenance of materiel in the Navy. As head of the Navy maintenance organization, he determines overall maintenance policies and procedures. Responsibility for management of maintenance below this broad oversight and policy role is shared by the CNO and the CNM. Overall responsibility resides with the CNO, because he is Commander of Operating Forces and is responsible for maintaining those forces in a sufficient state of readiness. The CNM has been assigned specific maintenance responsibilities, including direct control of depot maintenance production, development of broad technical guidance for organizational and intermediate maintenance, and execution of maintenance policy.

Four of the systems commands are responsible for support of systems and equipment in specific functional areas; one, NAVSUP, plans and manages secondary items. The systems commands, except for NAVSUP, have direct control over field maintenance facilities performing depot maintenance. NAVSUP assigns workload to designated overhaul points managed by other systems commands. In addition, NAVSUP publishes the Master Repairable Items List, which tells users the turn-in and depot overhaul points for repairable secondary items.

FIGURE 12. NAVY AND MARINE CORPS MAINTENANCE



The Commandant of the Marine Corps has responsibility for materiel support in conjunction with his role as Commander of the Operating Forces. The logistics system is designed to accommodate the Marine Corps' mission of maintaining a combat-ready capability deployed with the Navy's Atlantic and Pacific Fleets. The Marine Corps therefore operates two Supply Centers, located on the east and west coasts, each with similar capabilities. The Supply Centers are responsible for supply as well as depot maintenance. A third organization, the Marine Corps Supply Activity, is responsible for the computation and management of depot maintenance requirements for secondary items. Finally, the DCS(I&L) heads the Material Division at Marine Corps Headquarters, which determines materiel requirements, funds and assigns maintenance workloads, and balances competing needs.

4. Air Force

The organizations involved in maintenance engineering and production management and control within the Air Force include: the Air Staff, AFLC, Air Force Systems Command (AFSC), the Major Operating Commands, and the Wing Command. Figure 13 depicts the relationship among these organizations. A brief description of the management responsibilities and functions performed by the various levels follows.

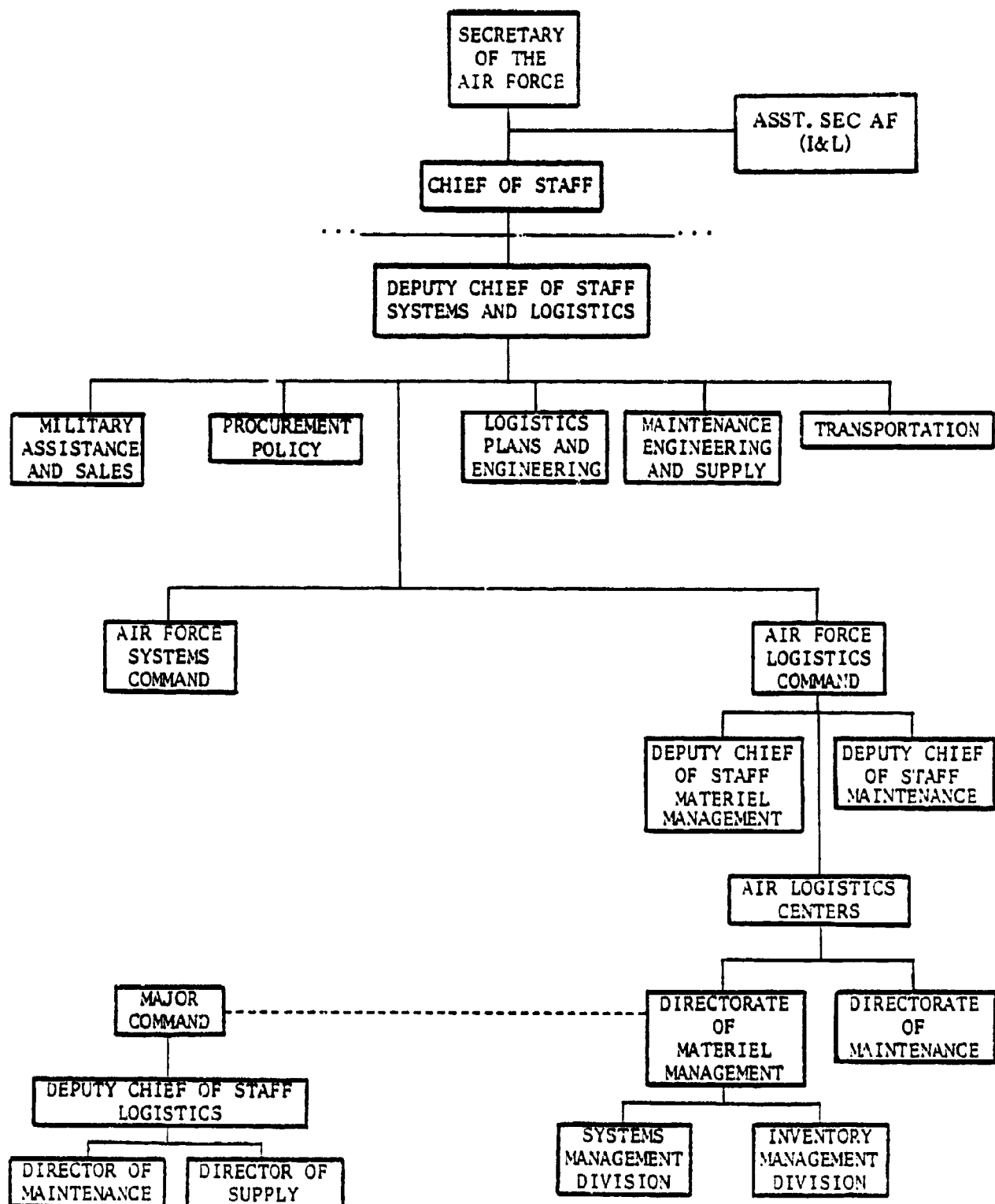
DCS (Systems and Logistics) Headquarters USAF: This office provides general supervision of Air Force maintenance policies, activities and organizations; reviews and defends funding requests, develops and evaluates maintenance management systems, and designates mission-essential systems and equipment.

The Directorate of Maintenance Engineering and Supply, Headquarters USAF: This Directorate is responsible for formulating broad engineering and maintenance policies to ensure the operational status of all weapons and communications systems, and supporting equipment. Excluded from this responsibility are medical equipment, vehicles, ADP equipment and civil engineering. The Directorate determines basic policies and maintenance planning for the entire Air Force; however, the development of base-level and depot maintenance procedures and systems procedures has been delegated to AFLC.

AFSC: This Command is responsible for the development of reliability and maintainability concepts during the design stages of new systems development and procurement; for data in support of maintenance engineering programs; and for testing of equipment and materiel.

AFLC: This Command provides central control for maintenance and logistics support of system and equipment end-items in the operational inventory. AFLC is also responsible for developing and managing depot maintenance capabilities in organic facilities (ALCs) and through contract services.

FIGURE 13. AIR FORCE MAINTENANCE



Within the AFLC, the Directorate of Materiel Management develops methods and procedures to be followed by all base-level organizations for both supply and maintenance activities. This Directorate directs AFLC data and management systems which support maintenance engineering and requirements computations. A parallel organization within the AFLC, the Directorate of Maintenance, is responsible for accomplishment of assigned workload at organic depot facilities and laboratories.

ALCs: These centers are designated the single points of repair in the Air Force for selected commodity groupings of items of materiel (Technology Repair Concept), and are responsible for programming, production and materiel management for assigned systems and equipment. Within the ALCs, a Directorate of Materiel Management establishes maintenance requirements, and assigns depot maintenance workloads for assigned systems and equipment end items as between organic, interservice and contract. This Directorate coordinates requirements and scheduling between systems and item managers responsible for assigned equipment and major commands. The Directorate of Maintenance in the ALCs manages organic depot level maintenance production for assigned systems and equipment to ensure accomplishment of workloads.

Also within the ALCs are the Systems Management and Inventory Management Divisions, which are jointly responsible for determining workload requirements and technical management for assigned systems and items. They negotiate with each major command to determine the scope of maintenance to be performed by the ALC.

MANAGEMENT AND CONTROL

1. OSD

Management and control over maintenance planning, programming and production at the OSD level is exercised through ASD(I&L). The officer under ASD(I&L) mainly responsible for maintenance management and programming is DASD(SM&S), and, within his office, the Directorate for Maintenance.

In general, the function of the relatively small ASD staff that monitors DoD maintenance activities is to review the Service program submissions for reasonableness and consistency. The Services are expected to provide compilations of maintenance requirements, and to submit budget requests that meet them. The Air Force data and computations are reviewed in connection with the formal OSD review of POM submissions, and the more detailed Logistics Annex to POM. In addition, representatives from ASD(I&L) attend budget hearings conducted by ASD Comptroller (ASD(C)), where the Services defend their budget requests for maintenance resources.

Most management emphasis by ASD(I&L) is devoted to central maintenance activity—industrially-funded, depot-level maintenance by the Services and contract

sources. Primary attention has been focused on encouraging the Services to implement automated systems to program depot maintenance, and to establish uniform and meaningful depot cost and production accounting systems. The objectives of these systems are to: aid in depot maintenance programming, assess productivity of various facilities, and encourage better management and decision-making by the Services.

Current reports from the existing system are used to compare overhaul costs against the cost of replacement, and to compare costs of overhauling identical items across depots and contractors. Based on these reports, ASD(I&L) encourages the Services to exercise management prerogatives to question uneconomic overhauls, and to use the lowest-cost provider when overhaul is justified. A more thorough description of the existing Depot Maintenance Reports, and a revised replacement system which ASD(I&L) has initiated, is contained in Appendix 2.

Other maintenance management functions performed at the ASD level are more day-to-day in nature, or, if longer-term, may represent responses to special initiatives. Examples of other ASD activities are: development of a handbook for Service use on uniform methods of measuring depot capacity and bottlenecks; encouragement of trial use of airline-type, reliability-centered maintenance for determination of maintenance requirements; and response to GAO reports and other Congressional requests.

2. Army

The Army distinguishes between major items and secondary items in the management of its logistics system. This distinction is somewhat arbitrary, depending on the "importance" of the item, and, consequently, the amount of management attention required. As a rule, a small number of items represents a large percentage of the Army's inventory value, and consumes the most management attention. Major items represent about 1% of line items, and 80% of the dollar value of the inventory, while secondary items given detailed management attention represent about 2% of the line items in the secondary items inventory. The situation is further complicated by the variety of equipment supported, ranging from combat vehicles to fixed-wing aircraft and helicopters.

The goal of Army maintenance is to maintain its inventory of equipment in maximum possible readiness at lowest possible cost consistent with high standards of workmanship. Maintenance management assigns tasks and requisite resources to meet this goal. Generally, the Army prescribes that maintenance will be performed to the maximum possible extent by the lowest echelon having capability and available capacity. To this end, four levels of equipment maintenance have been defined, based on the extent of repair requested: organizational; intermediate, consisting of two categories, direct support and general support, and depot maintenance.

Organizational: Organizational maintenance, performed by the operator and unit mechanic, is largely preventive, but also includes scheduled maintenance services, minor adjustments, replacement of materials on an item-change basis, and replacement of unserviceable parts not requiring special tools or equipment.

Direct Support: Direct support maintenance is performed by support maintenance shops and direct support units immediately supporting the user unit. Tasks performed at this level include: repair of end items not requiring sophisticated tools, provision of mobile services and technical assistance to user units, and the provision of repair parts supply support to user units. Whenever possible, direct support maintenance is performed on-site, usually by units indigenous to the combat division.

General Support: General support maintenance involves tasks beyond the capability of direct support levels, and is performed by installation maintenance shops and units. Tasks performed include: repair of assemblies and end items; provision of on-site maintenance and technical assistance to direct support units (exception basis only); repair of exchange items; and piece-part repair and overhaul, when dictated by equipment and configuration, operational requirements, or cost considerations. General support activities are managed by materiel managers at the command level, who schedule and program workloads to meet stockage requirements or to continue exchange programs.

Direct and general support maintenance units operate under elements responsible for the operation of command logistical support structures. Relatively mobile direct support units are used to perform on-site repair for combat operations, while less mobile general support units assist the command supply systems.

Fixed installation maintenance shops operate under the commander of the installation where they are located. The Maintenance Division with the DIO is responsible for the organization, staffing, workload, production planning, and day-to-day operation of these shops. Funding and manpower levels are provided to the installation through the parent major commands of the units.

Depot: Depot maintenance is the responsibility of national-level materiel managers and is performed by industrial-type installations, or by contract with commercial sources. Tasks performed involve: repair, overhaul, modernization and manufacture of equipment when those activities exceed the capability of lower-level organizations, e.g., when extensive disassembly or elaborate test equipment is required.

DARCOM is the central manager of Army depot maintenance operations within CONUS. Once responsibilities for specific equipment are assigned by the Commodity Commands, DARCOM assigns the programming of workloads and funding through MIDA. Army policy prescribes that organic capacity and capability be maintained in peacetime to satisfy the requirements of the Army's primary missions.

The Commodity Command assigns responsibilities for an end item to a specific facility, based on the manufacturer's specification of equipment and skills required for overhaul and rebuild, matched against the various depot capabilities. A data bank (Capabilities Engineering Data Reporting System) listing facilities, equipment, special tools and test equipment, and skilled labor, by depot, is used for this purpose. Files maintained within this system show resource availability (for example, productive man-hours, machine times) and resources required for each item maintained.

As previously mentioned, maintenance management assigns priorities based on item value and essentiality to support combat potential. Depending on whether an item is classified as major or secondary, alternative methods for managing its maintenance are employed. The basic management principles are to: track serviceable assets; determine overall inventory requirements (including maintenance float, pipeline stocks, and war reserves); and manage shortfalls between quantities available and required, through overhaul or procurement.

The economic makeup of the Army is distinct from that of the other Services. Since the Army is much more labor-intensive, it explicitly recognizes war reserve stock for major equipment end items. The Army economizes on overall costs in peacetime by stockpiling major equipment and economizing on labor, the influential cost factor. The other Services have a different cost structure, and economize on overall costs by economizing on the reserve of capital equipment--major end items are not explicitly carried in war reserve inventory categories.

Major Items: End Item Managers at Commodity Commands determine overhaul requirements for major end items by assessing the current inventory of serviceable assets relative to overhaul requirements, including contingency needs. Since new production can meet the latter requirements during an emergency, an estimate of what could be produced during the first six months of a war (called the production offset) is explicitly subtracted from gross requirements.

Secondary Items: Secondary items are treated on a slightly different basis. Maintenance/procurement objectives are set to maintain inventory levels that ensure a specified low probability of being out of stock. Again, estimates of serviceable assets are compared to prioritized requirements categories.

Data on the inventory of serviceable and unserviceable assets are maintained in the Selected Items Management System. The inventory of serviceable assets, plus quantities to be added by ongoing procurements is first determined. Requirements are based on a prioritized series of categories: mobilization reserves, foreign military sales, safety levels (fixed and variable), and procurement lead time and cycle time. Safety

levels and procurement lead and cycle times are defined in terms of stock level requirements. In the case of reparables, the repair cycle requirement is used to define pipeline needs in place of procurement lead and cycle time.

The requirements objective that results from these calculations is compared with available inventory levels to determine resupply actions—either depot repair or new procurements. Depot repair is the preferred alternative when funding and capacity is available. This alternative not only serves to maintain a vital capability, but is usually the most economical route.

3. Navy

The Navy applies three levels of maintenance. At the force unit level, organizational maintenance is performed by military personnel aboard ship or located at shore units. Intermediate level maintenance is accomplished aboard repair ships, tenders, aircraft carriers or other support facilities. Depot-level maintenance is performed at depot facilities (organic or contract), under the control of the appropriate systems command.

The maintenance management of a new item entering the inventory begins with the hardware systems commander or acquisition manager, who conducts analyses to define, schedule and control scheduled maintenance, and to determine materiel and manpower requirements for maintenance. Management/engineering analysis is based on considerations such as feasibility of repair, capability and economy of repair at the various levels, and physical characteristics of the item. Based upon these considerations, the hardware systems commander assigns a source, maintenance, and recoverability code, sets repair specifications, and designates repair facilities.

The Planned Maintenance Subsystem of the Navy Maintenance and Material Management System (3-M system) lists all preventive maintenance tasks for all shipboard or squadron equipment. Those tasks are specified as to when and how inspections and maintenance should be performed, who should do them, and what tools and equipment are required.

Aircraft: The Naval Air Systems Command (NAVAIR) assigns depot-level maintenance responsibility for aircraft and aircraft components. Requirements developed during the provisioning stage are matched against the capability and capacity of the facilities. A single designated overhaul point is usually chosen for airframes, based on these criteria. Components may be assigned to several facilities depending on the geographic distribution of users. For components requiring specialized skills and/or equipment, a single facility may be designated.

The scheduling of aircraft maintenance at the depot level is based on time in service. A sampling of aircraft from a series is evaluated prior to scheduled maintenance,

and when appropriate, service intervals are redefined, based on experience from this sample (Analytical Rework Program).

Engine rework is largely scheduled on the basis of usage rates projected from anticipated Flying Hour Programs. The Engine Manager arrives at gross rework requirements, based on usage, removal, and other factors, including so-called pool-engine requirements--an increment added to meet the needs of deployed fleets. Net rework requirements, which determine planning and funding of rework facilities are, then, gross requirements less serviceable assets (from the asset accounting system) after adjustment for safety-stock levels, float, and engines due out of rework during the planning period.

Ships: Maintenance management for the Navy's fleets involves tailoring a program and schedule around operating requirements and capabilities/capacities of repair facilities. In the case of shipyard overhauls, the high direct cost of maintenance, the prolonged period while the ship is non-operational, and the high opportunity costs of an expensive system being non-operational all argue for minimizing the frequency of scheduled overhaul. Since the fleet represents small numbers of vastly different types of ships, scheduling must accommodate the availability of shipyard manpower and facilities of requisite skills and capabilities.

Similar shipyard capabilities are generally available on the east and west coasts. Eight naval shipyards, augmented by private contractors, are available to perform overhaul. These yards have vastly different capabilities, reflecting the varied nature of the fleet.

Several factors determine overhaul requirements: regularly scheduled maintenance items arising from use, such as cleaning of the hull and renewing of steam boilers; unscheduled items dictated by damage or operation; and modifications or alterations to improve capability. The work program is based on scheduled items, plus items compiled aboard ship by the maintenance officers, subject to approval by the fleet and type commanders. This program is submitted ahead of time to allow advanced planning for materials and engineering. Since the planning process involves a trade-off among operational requirements, shipyard capacity, and priority needs of fleets and commands, the CNO, Naval Sea Systems Command (NAVSEA), and fleet and type commanders hold an annual joint conference to approve a final schedule and overhaul program.

Reparables: The management of reparable items involves: tracking inventory status, estimating failure rates, determining repair requirements, and scheduling repair or movement. The inventory manager accomplishes these tasks twice annually through an

algorithm called the "Central Secondary Item Stratification," and provides a two-year forecast of maintenance requirements. To keep inventory levels as low as possible, the Navy encourages maintenance actions at the lowest echelon possessing the necessary capability.

Fleet commanders are responsible for removal-replacement-repair at the intermediate level. The hardware systems commands, through their subordinate repair facilities, or the inventory manager, when repair is through contract services, are responsible for prompt depot level repair. The inventory manager is also responsible for recycling serviceable assets back into the Navy inventory. So-called rotatable pools of reparable items are often established and held at depot and intermediate levels to minimize repair cycle time. These serviceable buffer stocks are available to issue users and are replenished by the cognizant repair organization.

4. Marine Corps

Item managers and the ICP are responsible for management of maintenance actions for major and secondary items in the Marine Corps. Because of the unique mission requirements of the Marine Corps, a great deal of maintenance capability is assigned to the Fleet Marine Forces. Maintenance programming is closely coordinated by field commanders to ensure timely replacements for unserviceable items.

A management system (Replacement and Evacuation Program), provides for replacement and overhaul of mission-essential end items. The Material Division receives three-year forecasts of replacement needs from the user commands. A detailed schedule describing shipment of serviceable replacements, designated overhaul points, and timing of such actions, is then developed by the ICP.

The Secondary Depot Reparable Program controls the flow of secondary items to appropriate repair facilities. The system manages the shipment of serviceable replacements to users from the Operational Readiness Float, and designates the level and point of repair for the item. If the Program indicates that repair should be accomplished at the intermediate level, a replacement is issued from the Float while work progresses. Otherwise, a repair point is designated or disposal is ordered.

5. Air Force

Air Force maintenance management deals with six categories of equipment, with policy and management reflecting the inherent differences in each category. Three major categories are discussed below.

Reparables: Items within the Air Force are classified into one of three categories, depending on their repair status: non-recoverable, field-level repair only, and depot-level repair. This stratification reflects consideration of whether the item can be

repaired, and whether it is economical to do so. Such a determination involves comparing the cost of repairing the item with the price of procuring a new one. If items qualify for depot repair, Air Force policy dictates maximum feasible repair at the point of generation. Approximately 154,000 items fall into this category, and consume nearly half of depot maintenance expenditures in the Air Force.

Depot-level repair is accomplished by either organic or contract facilities. A "single point repair policy" designates an ALC as the unique repair facility for a group of items of similar technology. This concept (Technology Repair Center) avoids duplication of specialized test and repair facilities and labor skills.

Management of reparable involves determination of gross requirements, tracking of asset availability, and assessment of the means to cover shortfalls. Gross requirements are determined by calculation of the various buffer and pipeline stocks (float) levels that are affected by consumption. Consumption rates are estimated from flying hour programs. Buffers include: base stock levels, depot stock levels and pipeline war reserves. Gross requirements are next compared with serviceable (available) assets. Asset availability involves tracking of quantities repaired, condemned, and shipped elsewhere for repair. If repairs are not sufficient to meet requirements, a shortfall exists, and procurement requirements are determined.

Aircraft: The Chief of Maintenance is senior maintenance officer, and controls all assigned maintenance personnel and equipment at the base level. His responsibilities include: planning, executing, and recording maintenance activities. Base-level maintenance activity consists of inspecting and servicing equipment, and replacing or repairing unserviceable components.¹

The management of depot-level maintenance activity is the responsibility of Headquarters AFLC. Responsibilities include formulating policy, programming, and reporting. The age distribution and mix of Air Force fleets dictate in large part the required scheduling of depot maintenance. A Periodic Depot Maintenance (PDM) schedule, based on engineering specifications at the time the system enters the inventory, is assigned each aircraft type. Assignment of responsibility to organic, contractor, or interservice capability is also based on their respective equipment and labor skill capabilities and capacities.

Several factors lead to alterations in the prescribed depot maintenance schedule, either increasing or decreasing the frequency or the level of work performed. Each factor is described briefly below.

¹Air Force Manual 66-1 describes the maintenance management system applicable to base-level activities.

Aircraft Modifications Program: Two types of modifications are distinguished: Class IV, aircraft modifications, which are considered essential to flight safety, mission effectiveness, effective logistics support or prolonged service life, and Class V, modifications which provide a new or improved operational capability. Class IV programs are reviewed and approved by the responsible ALC's Configuration Review Board. For programs costing more than \$5 million, approval must be granted at Headquarters level. A more elaborate procedure is used to approve and schedule Class V modifications. A proposal is first documented by the using command, and reviewed at Headquarters USAF by a Requirements Review Group. When the concept is approved, technical, cost, and schedule analyses are performed by the responsible ALC and AFSC. Headquarters USAF then assigns a priority to the funding modification. Class IV and Class V modifications accomplished at the depot level represent controllable factors to the normal PDM overhaul and rebuild cycle.

Lead the Force Program: This concept calls for accelerated use of a new weapon system to gain knowledge of maintenance requirements, inspection criteria and modifications requirements. The systems user is responsible for execution of the technique. An attempt is made to maintain a two-year lead for about 10% of the fleet over the system's entire operational life.

Analytical Condition Inspection (ACI) and Controlled Interval Extension (CIE): The ACI program is an intensive inspection of a sample of aircraft from inventory to discover problems not obvious during routine inspections. Under the CIE program, normal maintenance and inspection intervals are extended for a sample of aircraft, and analysis is conducted with the aim of revising the current intervals upward. These two programs support an annual review of aircraft PDM schedules, which are conducted by the Maintenance Requirements Review Board at each ALC. These reviews are designed to modify the scope and frequency of the scheduled maintenance and inspection programs.

Engines: The management of engines of all varieties (e.g., jet, ballistic-missile, power units for aerospace ground equipment) is similar to that of reparables. Maintenance requirements are largely determined from usage rates and various inspection and maintenance factors. The Oklahoma City ALC operates a central engine data file, which compiles information from user organizations. The Aerospace Engine Life Committee establishes guidance for the development of maintenance factors such as overhaul, interval, base-removal interval, and repair cycle times, based on data from the central engine data file.

REPORTING, ACCOUNTING, AND BUDGETING

Maintenance information is obtained from a number of accounting and reporting systems of the various DoD Components. At the depot level, the Uniform Depot

Maintenance Accounting and Production Reporting System (DoDI 7220.29) is currently undergoing revision to correct inconsistencies in accounting treatment across the Services. The revised system, due to be available for FY 1977, will be based on full costing from all funding sources, and will identify resources expended to weapon systems. A more complete description of the current and revised systems, including the various reports that are produced, is contained in Appendix 2 of this report. This information is to be available for all DoD organic facilities and for contract services.

At the organizational and intermediate levels, each Service maintains a maintenance data collection system. These systems tend to be tailored to the needs of particular Services, and are generally used for operations management (unit and/or command level), and for collection of actuarial data for spares maintenance and procurement programming. Since Subtask 2 is developing indicators for the Air Force using available reporting and accounting systems, such as the Standard Base Level Maintenance Cost System, the balance of this section is confined to the Air Force.

1. Standard Aerospace Vehicle and Equipment Status Reports (AFM 65-110)

These reports cover the status, inventory and rate of utilization for Air Force aircraft, Ballistic Missiles, Electronics, Communications and Meteorological equipment (ECM), and Class I Trainer equipment. The information is gathered daily, aggregated in monthly reports by Headquarters AFLC, and forwarded to Headquarters USAF.

Status and inventory reports are submitted on an exception-reporting basis; the system is considered operationally ready unless otherwise reported. From these reports, operationally ready rates relative to possessed hours can be computed. More detailed descriptions of equipment status, indicating the reason for the system failure are also available. Among the conditions delineated in the reporting system are:

- NORM (Not Operationally Ready Maintenance)-Grounded
 - scheduled
 - unscheduled
- NORM-Flyable
- NORS (Not Operationally Ready-Supply)-Grounded
- NORS-Flyable.

Utilization reports are also provided daily. For aircraft, AF Form 781 lists flying hours, landings and sorties flow. These data had previously been used for internal Air Force management, and also for compliance with OSD reporting requirements. The Equipment Distribution and Condition Measuring and Reporting System (DoDI 7730.25) previously required quarterly reports of operationally ready, NORM, and NORS rates for

selected equipment, and narratives if OSD standards were not met. These reports are no longer required on a scheduled basis, but the Services still must furnish the information to OSD upon request.

2. Maintenance Data Collection System

This system provides maintenance production and systems failure information from base-level maintenance activities. These data are processed from mechanized reports (AFTO 349 is the basic Air Force format for reporting). In general, a record is made of the malfunction and the resources (man-hours and components) used to correct it. These data provide the information needed to compile productivity indicators, such as maintenance hours per flying hours, for specific systems.

3. Standard Base Level Maintenance Cost System

This system uses several other system and data sources to achieve full costing of maintenance expenditures:

- Maintenance Data Collection System for direct and indirect production labor hours
- Air Force Standard Base Supply System for supply dollar input classified as direct, investment and bench stock
- Other accounting systems for operations (purchased maintenance, TDY costs, rents, etc.)
- Contractor technical representatives' cost
- Contractor-operated activities
- Maintenance Administration System for indirect and supervisory costs
- Base engine manager for costs of engines sent to the depot.

Basic report formats from this system provide weapon systems costs by work breakdown structure, work accomplishment code for labor and for indirect nonproduction costs, and by customer. This overall system and its feeder systems promise to be an important source for the maintenance productivity and utilization indicators to be developed in Subtask 2.

CHAPTER FOUR: TRANSPORTATION

SCOPE AND TRENDS

Transportation may be defined as the movement or distribution of persons or things. DoD transportation of persons involves movement of combat forces for strategic or tactical mobility purposes, or of non-combat personnel on permanent or temporary change-of-station orders. DoD transportation of things involves movement of all classes of commodities required to support the Military Services and Defense Agencies in CONUS and overseas.

Transportation statistics are impressive. DoD-owned or chartered transportation moved more than 5 million passengers, 23 million tons of cargo, and 11 million tons of petroleum in FY 1975. Total obligations for transportation of persons and things exceeded \$4.7 billion in that fiscal year. DoD owns more than 340 strategic airlift aircraft and 50 ships directly involved in airlift and sealift, and charters many more for scheduled and unscheduled movements. The Military Services own thousands of wheeled land vehicles used in support of combat and non-combatant forces. While activity levels have decreased significantly since the end of the Vietnam conflict, transportation remains a big business within DoD.

ORGANIZATION AND RESPONSIBILITIES

1. OSD

The ASD(I&L) is

responsible for establishing policies and providing guidance to the DoD Components concerning (a) the efficient and effective use of DoD and commercial transportation resources, and (b) the establishment and operation of Transportation Single Manager Agencies.²

Within OASD(I&L), overall transportation responsibilities have been assigned to DASD(SM&S); primary responsibility has been delegated to the Director for Transportation and Warehousing Policy.³

SecDef policies require DoD transportation resources to be organized and managed for "optimum" responsiveness, efficiency, and economy in support of the defense mission. They also require that sufficient DoD-owned transportation be maintained and

²DoDD 4500.9, "Transportation and Traffic Management," June 28, 1976.

³This section covers only Transportation, and not Warehousing.

operated in peacetime to meet emergency and wartime requirements. Those same resources are to be used in peacetime to provide essential training for operational personnel and for logistic needs. Figure 14 shows the overall Defense Transportation System Organization.

2. Army

In the Office of the Secretary of the Army, overall transportation policy responsibility rests with the Assistant Secretary (Installations and Logistics). Primary responsibility has been delegated to his Deputy for Supply, Maintenance, and Transportation, aided by a Special Assistant for Transportation. (See Figure 15.)

Under the Chief of Staff, the DCS (Logistics) has delegated the following transportation responsibilities to the Director for Transportation and Services:

- Coordination of all Army movement requirements
- Supervision of transportation services
- Transportation engineering
- Strategic mobility planning
- Transportation concepts, doctrine, plans, policies, and programs.

The Director of Supply & Maintenance has been delegated certain budgeting responsibilities for transportation. (See REPORTING, ACCOUNTING, AND BUDGETING.)

Each of the major operating commands of the Army has assigned transportation commanders. DARCOM has delegated its responsibility for physical distribution to the Directorate for Materiel Management, specifically to the Storage and Transportation Division. Also under the Army Chief of Staff, but with joint responsibilities for defense traffic management, is the Military Traffic Management Command (MTMC), discussed later in this section.

3. Navy and Marine Corps

In the Office of the Secretary of the Navy, the ASN(I&L) has overall transportation policy responsibility, aided by a Special Assistant for Transportation. (See Figure 16.) Under the CNO, the Deputy CNO (Logistics) has delegated his transportation responsibilities to two offices: the Transportation Policy and Management Branch within the Material Division, and the Assistant for Mobility Planning within the Logistics Plans Division. Overall management authority for Navy materiel transportation has been vested in the Commander, NAVSUP, under the CNM. Each of the major operating commands has assigned transportation commanders. Also under the CNO is the Military Sealift Command (MSC), discussed later in this section.

The office responsible to the Commandant of the Marine Corps for transportation policy and management is the Director, Facilities and Services Division.

FIGURE 14. DEFENSE TRANSPORTATION SYSTEM

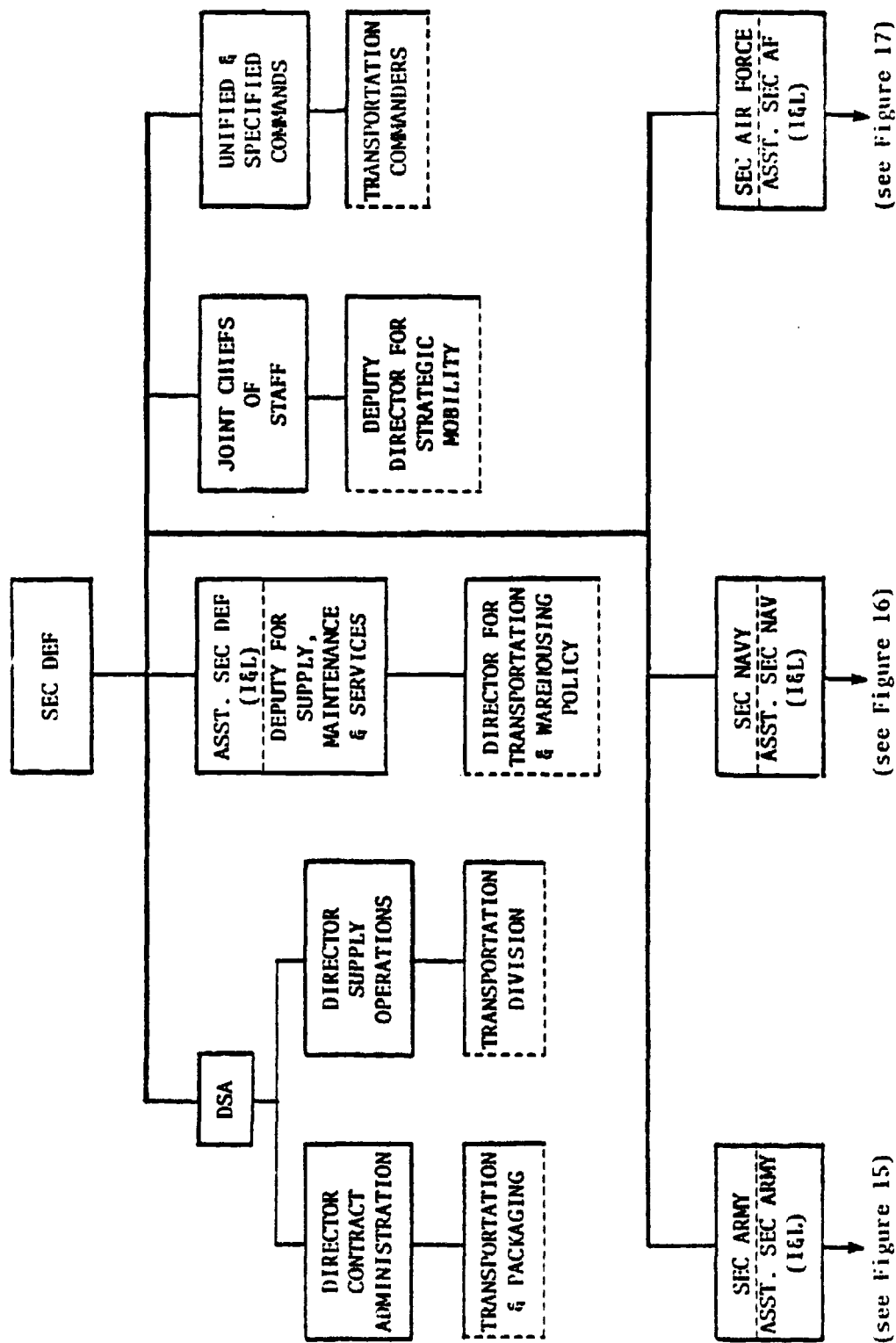


FIGURE 15. ARMY TRANSPORTATION SYSTEM

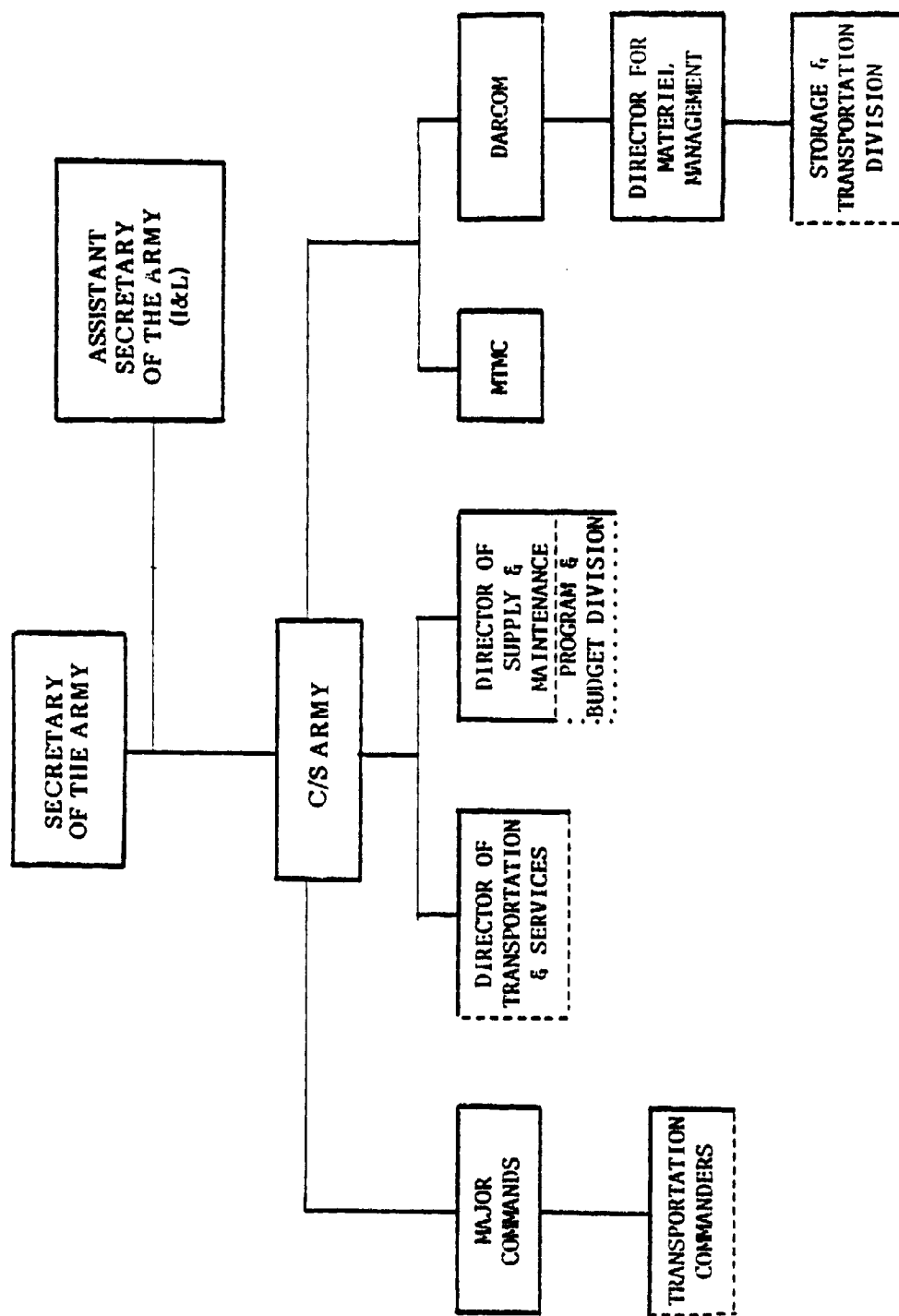
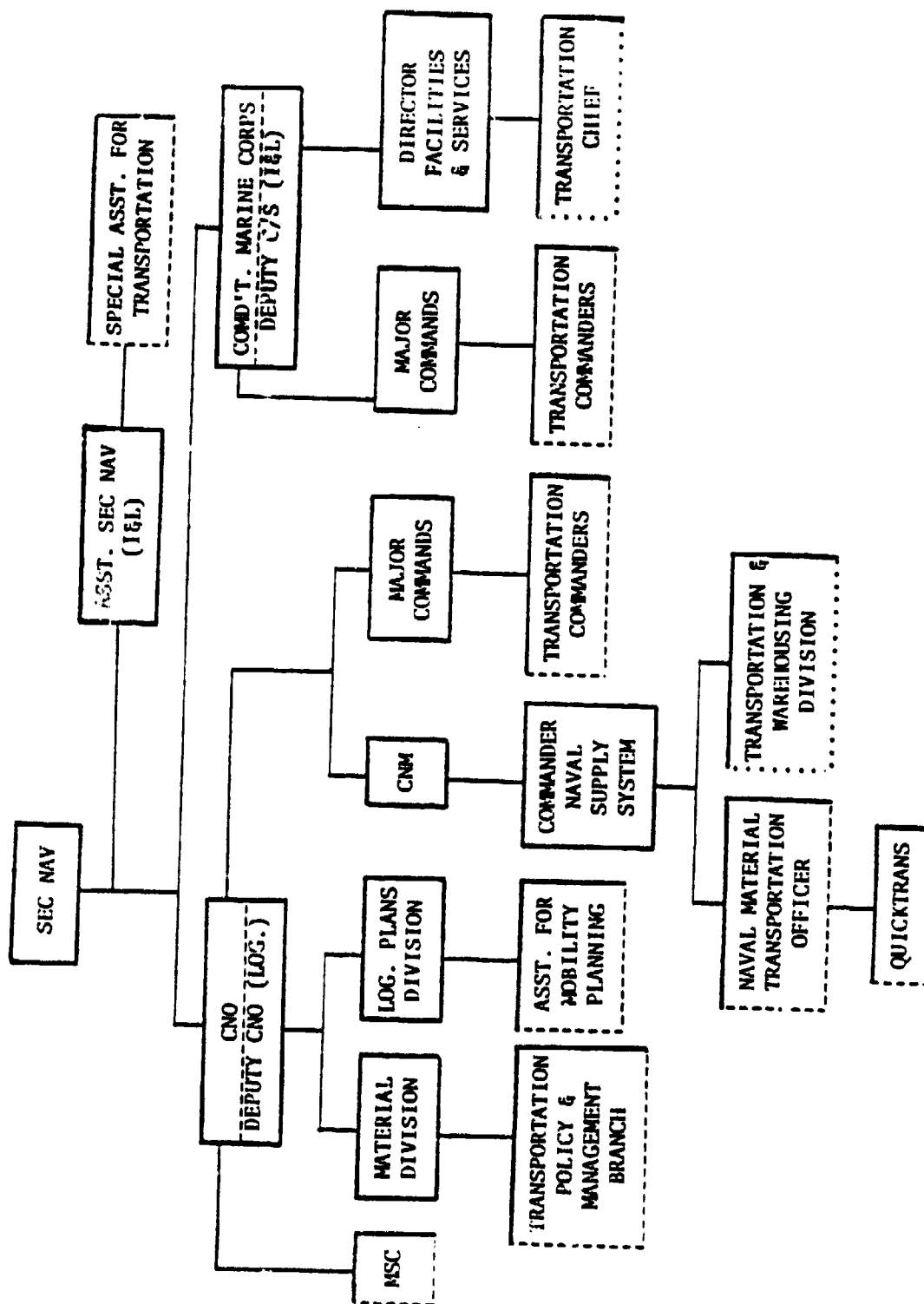


FIGURE 16. NAVY TRANSPORTATION SYSTEM



Primary responsibility for transportation

Primary responsibility for Second Destination Transportation Budget Development

Likewise, each of the major Marine Corps commands has assigned transportation commanders.

4. Air Force

In the Office of the Secretary of the Air Force, the Assistant Secretary (Installations and Logistics) has overall transportation policy responsibility. That policy responsibility has been delegated to his Deputy Assistant Secretary (Logistics), who is aided by a Deputy for Transportation and Communications. (See Figure 17.)

Under the Chief of Staff of the Air Force, the DCS (Systems and Logistics) has delegated his transportation responsibilities to the Director for Transportation. AFLC has the responsibility for transportation requirements and procedures. Within AFLC, the Directorate of Transportation manages the Logistics Air Transportation Command (LOGAIR). As in the Army and Navy, each major operating command within the Air Force has assigned transportation commanders. Also under the Chief of Staff is the Military Airlift Command (MAC), discussed later in this section.

5. Other Defense Organizations

DSA is responsible for the cost of first destination transportation of the supplies it moves, and for second destination transportation (SDT) costs of such supplies within CONUS.⁴ Two directorates within DSA handle those responsibilities: the Contract Administration Directorate, with primary responsibility for first destination transportation assigned to the Transportation and Packaging Division; and the Supply Operations Directorate, with primary responsibility for SDT assigned to the Transportation Division (see Figure 14).

Within the JCS, the overall responsibility for strategic movement matters belongs to the Logistics Directorate (J-4), with primary responsibility assigned to the Deputy Director for Strategic Mobility. The Logistics Directorate also administers and supports the Joint Transportation Board, which acts to resolve any conflicts concerning common-user transportation resources. Under the JCS, the unified and specified commands have assigned transportation commanders.

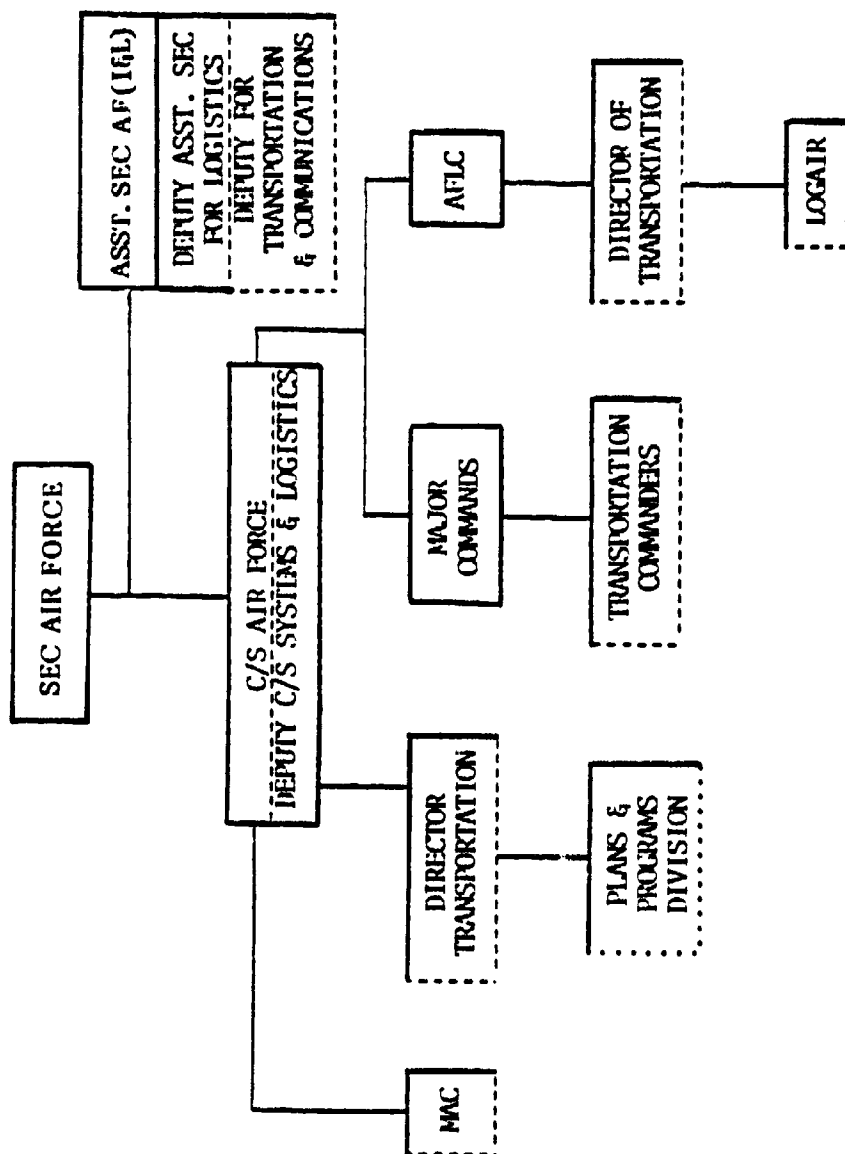
⁴DoDI 5000.8 defines first destination transportation as:

(1) The movement of property from f.o.b. point of origin to the point at which the materiel, in the form required for use, is first received for use or storage for subsequent distribution in the military supply system. (2) The costs of such movement,

and second destination transportation as:

(1) The subsequent movement of property for intradepartment or interdepartment distribution from the point of storage at which originally received from f.o.b. point of origin. (2) The costs of such movement.

FIGURE 17. AIR FORCE TRANSPORTATION SYSTEM



Primary responsibility
for transportation

Primary responsibility for Second Destination
Transportation Budget Development

Many of the DoD-owned transportation resources are managed by single manager agencies, a concept which has gradually evolved since World War II. Under this concept, a specific kind of transportation service is assigned to a Military Department, with the Secretary of that Department as the single manager. He, in turn, appoints an Executive Director to administer the agency, which then provides transportation service to all the Military Departments and Defense Agencies. The single managers and agencies are: the Secretary of the Air Force and MAC; the Secretary of the Navy and MSC; and the Secretary of the Army and MTMC.

All of the single manager agencies have identical functional responsibilities:

- Provide transportation planning support to the JCS, the Unified and Specified commands, the Military Services, and the DoD Agencies
- Provide airlift service, ocean transportation, or traffic management and terminal support to DoD Components, as appropriate
- Develop plans to ensure the efficient use and control of military-owned and commercial air, ocean, and CONUS land transportation resources and capabilities made available to DoD under mobilization or other emergency conditions.

Likewise, all of the single manager agencies have identical purposes:

- Eliminate duplication and overlapping of effort between and among Military Departments, Defense Agencies, and other DoD Components
- Improve the effectiveness and economy of airlift service, ocean transportation, military traffic, land transportation, and terminal operations throughout DoD
- Ensure that the approved emergency and wartime requirements of DoD are met.

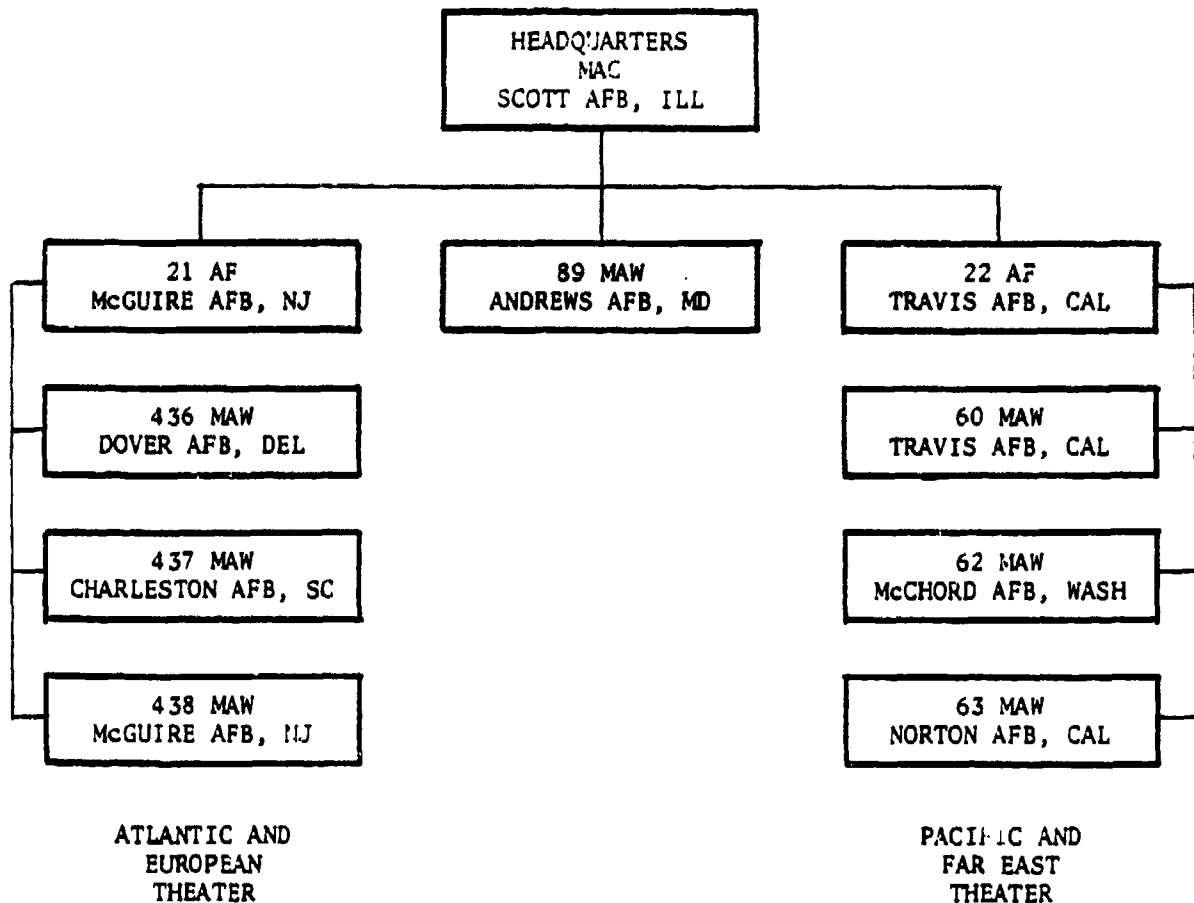
In what follows, we discuss other functions and responsibilities of MAC, MSC, and MTMC.

6. MAC

MAC maintains and operates a DoD airlift service between CONUS and overseas areas, as well as between and within overseas areas. To provide this service, MAC uses its own fleet of some 70 C-5 and 270 C-141 aircraft, as well as chartered commercial aircraft, for both scheduled and unscheduled flights. MAC recently acquired responsibility for some 250 C-130 aircraft formerly assigned to the Tactical Air Command.

The basic MAC organization is depicted in Figure 18. The bulk of the C-5, C-141, and C-130 aircraft are assigned to the 21st and 22nd Air Forces, while the 89th Military Airlift Wing has a variety of aircraft, with the responsibility for Special Assignment Airlift. This by no means describes all of MAC's assets; MAC is also

FIGURE 18. MILITARY AIRLIFT COMMAND



responsible for operations at a number of bases in CONUS and overseas, as well as for providing support to the airlift fleet. The forces described above, however, constitute that portion of MAC which is financially managed under the Airlift Service Industrial Fund (ASIF).

In addition to its own fleet of aircraft, MAC contracts with commercial air carriers for a substantial part of its airlift. In recent years civil augmentation has transported over 80% of the channel traffic⁵ passengers and about 10% of the channel traffic cargo. Augmentation for emergency or wartime conditions may be obtained from two sources: the Civil Reserve Air Fleet (CRAF) and the Air Reserve Forces. CRAF consists of commercial aircraft suitable for military transport purposes, selected by MAC,

⁵Channel traffic is the movement of personnel and cargo over established worldwide MAC routes.

and allocated to CRAF by the Office of Emergency Transportation in the Department of Transportation. CRAF is composed of four segments: Long-Range International, Short-Range International, Domestic, and Alaskan. Over 300 commercial aircraft are currently allotted. The Air Reserve Forces consist of the Air National Guard and the Air Force Reserve, and provide reserve augmentation of over 300 transport-type aircraft.

The ASIF finances the airlift services of MAC, and is reimbursed for those services by revenues from MAC customers. Record-keeping requirements of the fund provide data on costs and associated revenues by manageable segments of airlift operations. In this manner, the ASIF permits MAC to set tariffs which approximate the O&M cost of providing those services. Table 11 shows MAC's revenues, expenses, and net operating results for FY 1972 through FY 1975.

TABLE 11. MAC FISCAL HISTORY
(Millions of \$)

	Fiscal Year			
	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Revenue	824.7	753.2	663.9	878.7
Expenses	850.9	710.9	717.0	910.3
Net Operating Result	-26.2	+42.3	-53.1	-31.6

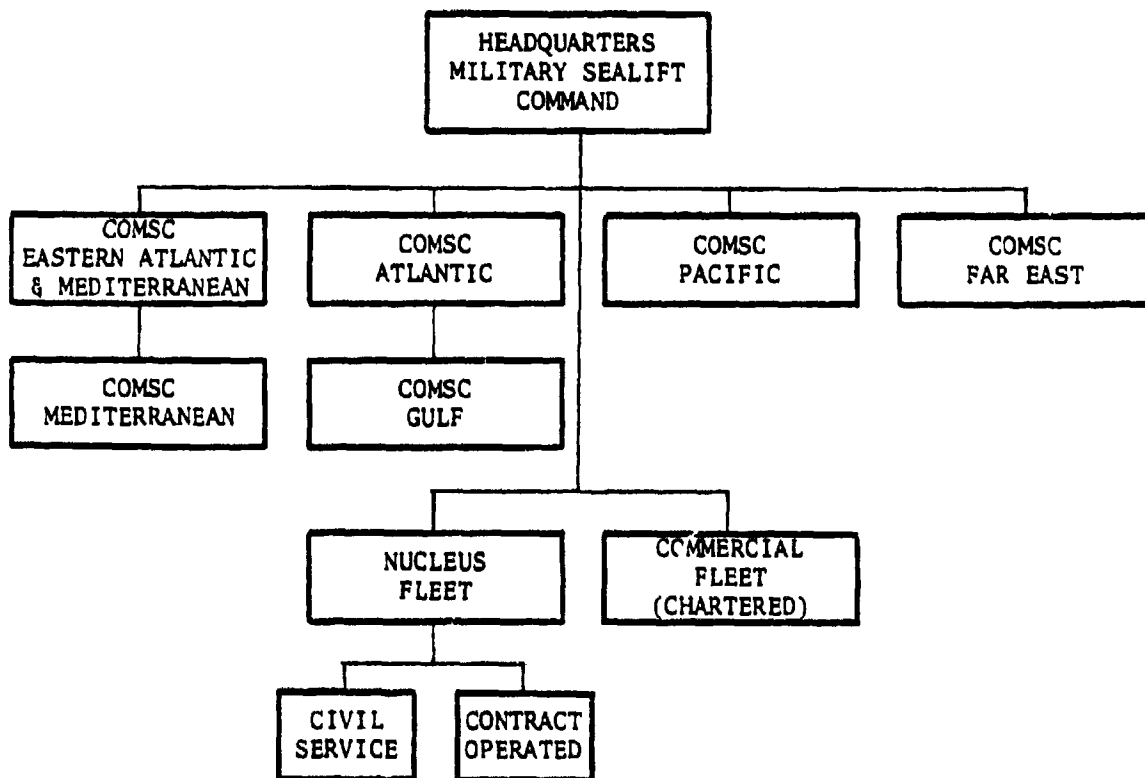
A major financial problem facing MAC is an accumulated ASIF deficit of almost \$100 million. A number of factors contribute to the problem. First, the decrease in airlift requirements following the end of the Vietnam conflict has reduced the utilization of MAC airlift resources, forcing an increase in tariff rates. That increase has made it more attractive for MAC customers to direct their shipments to sealift, despite the increased transit time. Consequently, MAC utilization again decreases, forcing another tariff increase, etc. Second, current airlift utilization of MAC military transport aircraft is insufficient to maintain adequate aircraft and maintenance crew readiness for wartime contingencies. Hence, additional non-revenue-producing training flights must be scheduled. While those training flights are funded through the ASIF, the tariff rates do not fully compensate for their cost.

7. MSC

MSC maintains and operates a DoD sealift service between CONUS and overseas areas, between and within overseas areas, and in intercoastal and coastwise

service within CONUS. To provide this service, MSC controls a fleet of both U. S. Naval Ships (USNS) and commercial ships. The USNS fleet consists of 44 civil service and 14 contract-operated ships in full operating status, and nine USNS ships in ready reserve. The chartered commercial fleet consists of 36 ships in full operating status, and six in reduced operating status. Of the total 94 ships in full operating status, 23 are cargo ships, 28 are tankers, 15 are fleet support ships, 25 are special projects ships, and three are bulkers. The basic MSC organization is depicted in Figure 19. All of the area commands have MSC offices located throughout their areas.

FIGURE 19. MILITARY SEALIFT COMMAND



All of MSC's operations are financed via the Navy Industrial Fund (NIF) which, like the ASIF, is reimbursed through revenues from its customers. Most (over 80%) of those revenues are paid to commercial interests. Table 12 shows MSC's revenues, expenses, and net operating results from FY 1972 through FY 1975.

TABLE 12. MSC FISCAL HISTORY
(Millions of \$)

	Fiscal Year			
	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Revenue	905.6	729.5	651.7	935.1
Expenses	863.3	764.2	730.8	849.0
Net Operating Result	+42.3	-34.7	-79.1	+86.1

The major problem facing MSC is the obsolescence of its sealift capability. To combat this problem, MSC has periodically retired the older T-1 and T-2 tankers, and has added to the USNS fleet a number of new charters, both government and contractor-operated.

8. MTMC

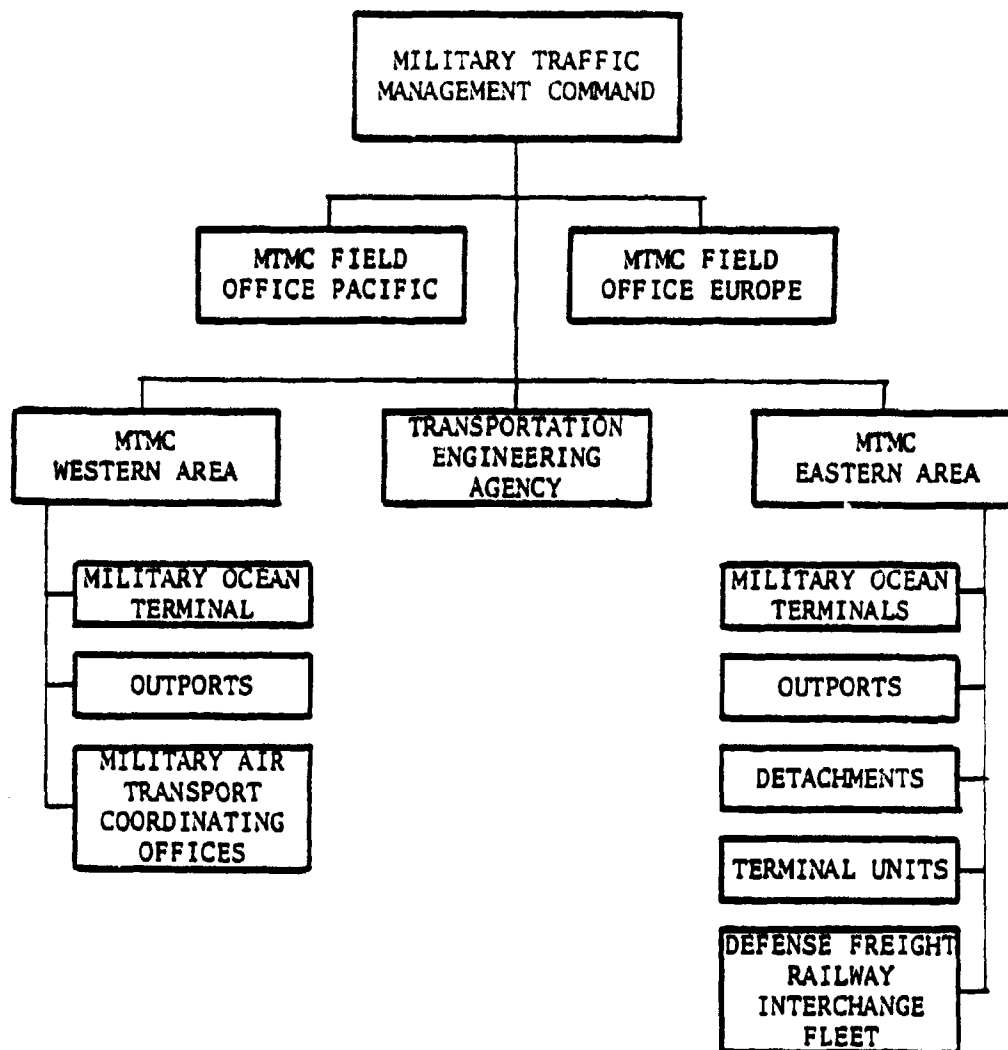
MTMC provides DoD traffic management services within CONUS, and controls and operates military-owned CONUS land transportation required to supplement commercial transportation. MTMC operates Military Ocean Terminals, outports, detachments, terminal units, and Military Air Traffic Coordinating Offices (MATCOs) in CONUS and overseas. The basic MTMC organization is depicted in Figure 20. MTMC also controls some 4000 railway cars assigned to the Defense Freight Railway Interchange Fleet (DFRIF). A planned extension of MTMC's responsibilities is the eventual control and operation of Army ocean terminals in Europe. Unlike MAC and MSC, MTMC is jointly staffed.

As with MAC and MSC, MTMC's operations are financed through the Army Industrial Fund (AIF), reimbursed through revenues from its customers. Table 13 shows MTMC's revenues, expenses, and net operating results for FYs 1974 and 1975.

TABLE 13. MTMC FISCAL HISTORY
(Millions of \$)

	Fiscal Year	
	<u>1974</u>	<u>1975</u>
Revenue	141.4	136.7
Expenses	139.3	134.9
Net Operating Results	+2.1	+1.8

FIGURE 20. MILITARY TRAFFIC MANAGEMENT COMMAND



Among MTMC's many responsibilities are the development and maintenance of current transportation cost and statistical data on all CONUS passenger and freight movements. MTMC reports these data periodically by branch of Service and by DoD totals. These data provide excellent sources of information on non-industrial-fund operations.

9. Contract Carriers

Because MAC is restricted from providing airlift service within CONUS, the Military Services must rely on commercial air services for CONUS passenger and cargo airlift. To provide CONUS cargo airlift on a dedicated basis, the Air Force has established LOGAIR and the Navy, QUICKTRANS.

LOGAIR is an airlift contract shuttle system operating between ALCs, aerial ports, and CONUS bases, serving a total of about 60 installations. QUICKTRANS provides a similar service, but includes trucking service as well. QUICKTRANS currently serves over 30 installations. MAC negotiates and procures the cargo airlift contracts for both LOGAIR and QUICKTRANS, while MTMC provides the same service for the QUICKTRANS truck contracts. QUICKTRANS terminal services are included as part of the contractual arrangements; on the other hand, the Air Force provides terminal services for LOGAIR.

10. Mobility Capabilities

Airlift and sealift capabilities under mobilization are represented by active MAC and MSC assets and by augmentation forces. As mentioned earlier, MAC augmentation forces consist of CRAF and the Air Reserve Forces. MSC augmentation consists of the USNS in Ready Reserve, the chartered MSC commercial fleet in Reduced Operating Status, regularly scheduled berth lines, ships withdrawn from the National Defense Reserve Fleet (NDRF), and available foreign shipping.

CRAF represents a substantial contribution to overall airlift resources, but does pose some problems. Aircraft allotments to CRAF have been reduced by over 100 since 1970, mostly in the Long-Range International segment. Also, because of the way CRAF carriers are equipped, CRAF does not provide a major increase in oversize and outsize cargo lift capability. On the other hand, CRAF passenger capabilities may well be in excess of wartime requirements.

The Air Reserve Forces include about 130 Air National Guard airlift aircraft, and about 200 Air Force Reserve airlift aircraft. The bulk of those aircraft are C-130s, primarily for tactical airlift. Additionally, the strategic airlift force of MAC is augmented by Reserve Associate aircrews qualified in the C-5 and the C-141.

The Ready Reserve and Reduced Operating Status assets of MSC amount to about 45 ships. The size of the NDRF is decreasing rapidly; many ships are being sold or scrapped. The other source of shipping available to MSC is the Merchant Marine, through regular scheduled berth lines or charters. To fill that need, the Merchant Marine has about 875 ships of all types.

MANAGEMENT AND CONTROL

This section discusses management and control processes within DoD. As stated elsewhere, the purpose of transportation is to move persons or things from one place to another. The need for transportation depends on other DoD functions, e.g., service personnel rotation, temporary duty assignments, training exercises, emergency/contingency demands, and supply and maintenance activities. Management of

transportation assets and forecasts of transportation requirements reflect operational and other logistical needs. The remainder of this section discusses the two major systems for management and control of transportation, the Military Standard Transportation and Movement Procedures (MILSTAMP), and the Uniform Materiel Movement and Issue Priority System (UMMIPS), and describes the operational interfaces among the three transportation agencies and other DoD Components.

1. MILSTAMP

MILSTAMP provides the policies and procedures required to manage and control the movement of materiel through the Defense Transportation System. MILSTAMP was put into effect in 1963 to standardize all DoD transportation of materiel, and to permit effective management and control through automated document flow, which allows the interchange of logistics data between and among the Military Services and Agencies.

Under MILSTAMP, the ASD(I&L) is responsible for formulating policy and movement control of military-sponsored shipments, and for resolving policy and resource problems. MTMC administers MILSTAMP, and has promulgated the MILSTAMP Regulations.⁶ MTMC is responsible for developing and maintaining the system, and insuring its compatibility with other military standard logistics data systems. MTMC is also responsible for resolving procedural issues with the Services and agencies, and for recommending resolutions of policy issues to the ASD(I&L). The Military Services and agencies are responsible for complying with MILSTAMP procedures in the management of movement data, and for establishing Shipper Service Control Offices (referred to as Airlift Clearance Authorities) to clear CONUS export air shipments and to perform other logistics management functions.

2. UMMIPS

UMMIPS⁷ sets forth the criteria for ranking materiel requirements based on the mission importance of the requiring activity and the urgency of need for the materiel. It also prescribes incremental time standards for requisition processing and materiel movement.

The ASD(I&L) is responsible for UMMIPS' implementation, for resolving requests for deviation or exemption from UMMIPS, and for chartering periodic reviews of operation to: ensure consistent interpretation and uniform application of the standards at

⁶ DoD Regulation 4500.32R

⁷ DoDD 4410.6 of February 18, 1971

all echelons; analyze the validity of established time standards; and improve and simplify UMMIPS. The JCS are responsible for supervising overall implementation of SecDef's guidelines on assignment of Force/Activity Designators (FADs), which rank materiel requirements by mission importance of the requiring activity. The DoD Components are responsible for developing and publishing implementing regulations and for enforcing accurate use of UMMIPS.

Along with FADs, UMMIPS specifies Urgency of Need Designators (UNDs). Based on FADs and UNDs, a system of Priority Designators (PD), has been established under which all DoD materiel is transported; it is discussed in Appendix 2 under MILSTEP.

3. Operational Interfaces

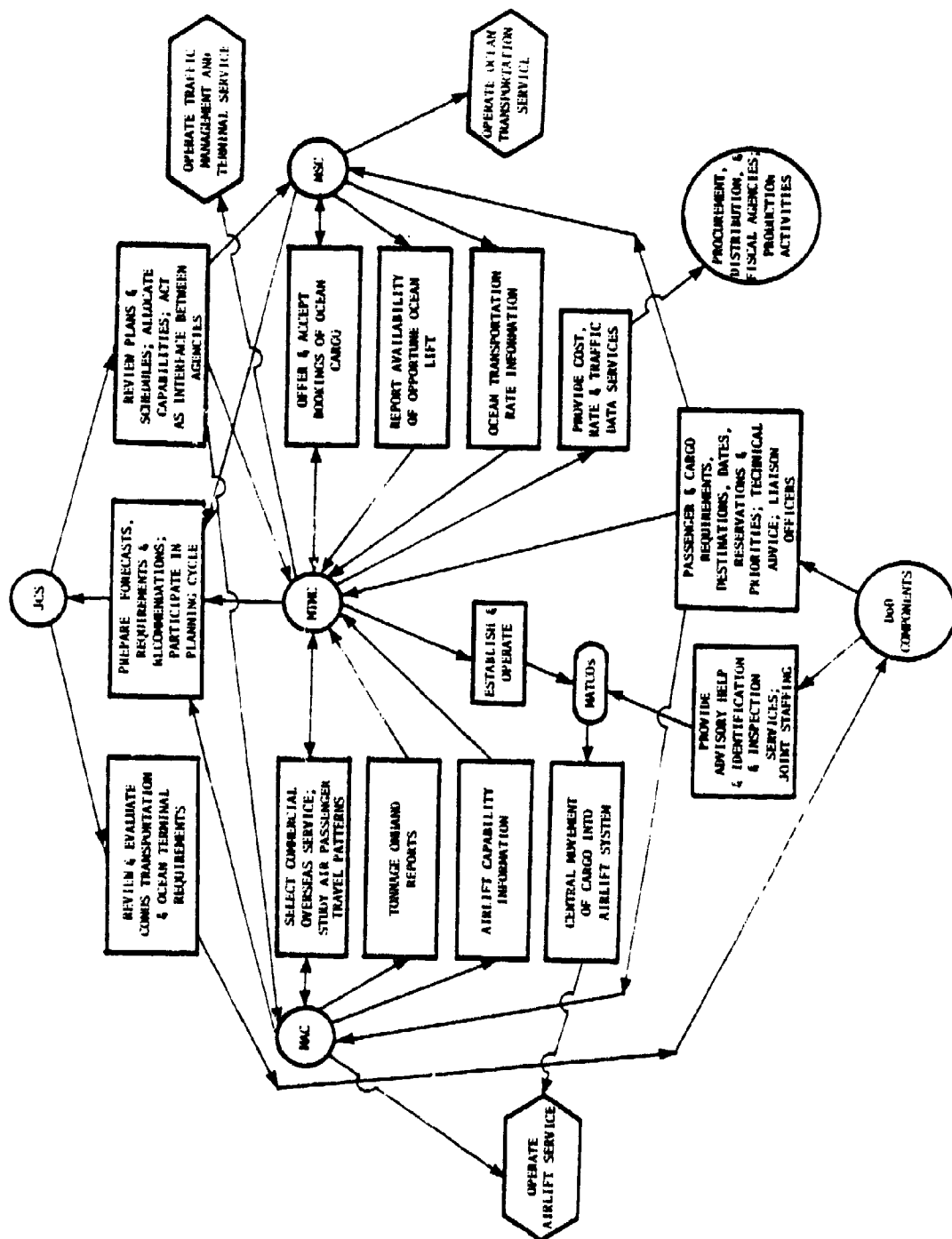
The three transportation operating agencies interact in many ways with the JCS and the DoD Components, as well as with each other. These interactions and interfaces at the operational level are depicted in Figure 21. Significantly, MTMC plays a key coordinating role in the Defense Transportation System, while MAC and MSC provide the end product, i.e., air and surface transportation.

However, despite its apparent centrality in Figure 21, MTMC's role is not as pervasive as it might be. For example, MTMC is responsible for diverting air passengers or cargo in CONUS when deemed necessary, but only if both the shipper (the DoD Component) and MAC concur. Likewise, MTMC is responsible for selecting the CONUS mode of transportation only for cargo shipments weighing 10,000 pounds or more. It should also be noted that the DoD Components deal directly with MAC and MSC on passenger and cargo requirements, and not through MTMC.

The interfaces depicted in Figure 21 should be thought of more as working relationships among independent entities, rather than formal superior-subordinate relationships. Consequently, each of the three transportation operating agencies plans and conducts its operations to satisfy the movement requirements levied upon it by the DoD Components. While MTMC is in a position to recommend diversions and to question CONUS-to-overseas shipments, it does not have absolute authority. It might be more accurate, then, to consider the interface relationships in Figure 21 as a means of avoiding bottlenecks, rather than of ensuring that the DoD transportation system, as a whole, is cost-effective and responsive.

Not shown, but inherent in Figure 21, is ASD(I&L)'s responsibility for setting Defense transportation policies. To carry out that responsibility, he requires timely and comprehensive information on the operation and cost of the transportation system. But the information currently received is fragmentary, representing reports from individual entities operating independently and with independent goals. The orientation of those reports differs among the three agencies, and does not necessarily reflect the measures

FIGURE 21. TRANSPORTATION AGENCIES' INTERFACES



each uses to evaluate its own performance. The emphasis which each agency places on balancing out revenues and expenditures in its industrial fund complicates this problem. Individual net results significantly different from a break-even position cause concern, even though total net results for all three industrial funds might be very close to a break-even position.

REPORTING, ACCOUNTING, AND BUDGETING

In this section, we discuss the principal types of transportation information available to DoD, and the budget process within DoD and the Services relative to SDT and the Transportation Agencies. Because transportation is a simple process, the movement or distribution of persons or things from one place to another, it can be categorized and measured with four simple terms:

- Identity - what is being moved
- Activity - how much is being moved how far
- Financial - how much it costs
- Responsiveness - how fast it moves.

Identity is just a means of categorizing the moved item into convenient groups for applying the remaining three terms. Activity involves both units (number of tons, passengers, or shipments) and distance (miles), as well as their combination (i.e., ton-miles). Financial involves both dollars (total costs, revenues, etc.), and the dollar rate (cost per ton, cost per mile). Responsiveness involves primarily the amount of time (hours, days) required for transportation.

1. Reporting

Unfortunately, the transportation agencies do not all report according to the same terms of measurements. Another difficulty is that the industrially-funded agencies are not the only providers of transportation services. A third problem is that straightforward cost comparisons may be inappropriate where the transportation methods and procedures are not commensurable. Despite these problems, some comparative descriptions can be made.

At the outset, it appears necessary to distinguish between industrially-funded (IF) and non-industrially-funded (non-IF) transportation. IF transportation, in general, is reported in greater detail because the single manager agencies control the information collection resources. Non-IF transportation in CONUS is aggregated and reported by MTMC, based on the Government Bills of Lading (GBLs) or Transportation Requests (TRs) received by the Military Service Financial Centers which accept them for payment, but MTMC does not control the sources of the information. Another and more important

reason for the distinction between IF and non-IF transportation is that ASD(I&L) has more direct supervision of the programming and budgeting of funds for IF transportation.

(a) MAC

MAC prepares three separate reports on transportation financed by the ASIF: the Airlift Data Summary, containing data from several fiscal years; the Quarterly Report, displaying data from the latest fiscal year quarter; and the Budget Estimate, displaying actual data for the previous fiscal year and estimates for the current and budget fiscal year.⁸

The information obtained by combining these sources is summarized in Table 14. That information is categorized by Channel Traffic, Special Assignment Airlift Mission (SAAM), and Others.⁹ The same sources also report other significant information: total ASIF revenues, expenses (including commercial augmentation), and operating results; number of aircraft and personnel assigned; flying hour performance (programmed, actual, and flying hour rates); and number and composition of the CRAF.

TABLE 14. MAC OPERATIONS INFORMATION

		By Service		Other DoD	Total
No. of	Passengers	x	x	x	x
	Tons of Cargo	x	x	x	x
Ton Miles	Passengers	x	x	x	x
	Cargo	x	x	x	x
Revenue \$-Passengers and Cargo		x	x	x	x
Total Ton-Miles		x	x	x	x
Total Revenue \$		x	x	x	x

⁸Submitted in accordance with the DoD Budget Guidance Manual, DoD 7110-1-M.

⁹Channel Traffic-The movement of personnel and cargo over established world-wide routes, serviced by either scheduled military aircraft or commercial aircraft under contract to and scheduled by MAC.

SAAM-Those airlift requirements, including JCS-directed/coordinated exercises, which require special consideration due to the number of passengers involved, weight or size of cargo, urgency of movement, sensitivity, or other valid factors which preclude the use of channel airlift.

(b) MSC

MSC prepares two reports on transportation financed by the NIF: the MSC Annual Command Report, Financial and Statistical Review (MSC Report 7700-2); and the Planning Budget, submitted in accordance with the DoD Budget Guidance Manual. Part Two of MSC Report 7700-2 is a detailed quarterly summary of cargo (M/T) and petroleum (L/T) shipments by type of vessel (MSC Nucleus, Time Charter, etc.), and by user (Army, Navy, etc.). MSC also prepares a brief monthly financial statement showing the NIF Balance Sheet and the MSC Statement of revenue and costs.

Table 15 summarizes the significant information from those reports, according to Cargo, Passenger, Tanker, Project, and Fleet Support Ships. The Project Ships Service provides seagoing platforms to the Military Services and other government agencies in the fields of oceanography, mapping, charting, geodesy, tracking of space vehicles and missile firings, and cable maintenance. The Fleet Support Service provides civilian-manned noncombatant support ships to the Navy for underway replenishment of fuel, stores, and supplies, and towing and salvage operations. All of the information in Table 15 can be obtained from the MSC Planning Budget. Other significant information available from that source includes number of ships and personnel assigned, and operating costs per ton-mile.

(c) MTMC

MTMC prepares two major reports on transportation activities: the Budget Estimate, containing the annual report for the prior year; and the Progress Report, which is almost exclusively concerned with non-IF transportation, and will be discussed separately. Table 16 summarizes the significant information in the annual report. Other significant information from that source includes: number of personnel assigned; total costs and net operating results; expenses by command and by area for transportation services, DFRIF, and ocean terminals; cargo transshipment expenses by area; and cargo tonnage and unit costs by commodity.

(d) Non-IF Transportation

A large portion of total DoD transportation expenditures are recorded by MTMC and reported in their quarterly Progress Report. Additionally, that Progress Report is also prepared by branch of Service, i.e., Army, Navy, Air Force, Marine Corps, DSA, and other DoD agencies. The information contained therein refers almost exclusively to CONUS transportation; MAC and MSC IF data are not included.

The report describes three main categories of traffic: CONUS GBL freight, CONUS passenger, and GBL personal property. The information for GBL freight and GBL personal property traffic is presented by FY quarter and cumulative totals, and

TABLE 15. MSC OPERATIONS INFORMATION

		By Service	Other DoD	Total	Expenses
CARGO	Income	xx	xx	xx	xx
	M/T*	xx	xx	xx	
	M/T/M	xx	xx	xx	
PASS.	Income	xx	xx	xx	xx
	No.	xx	xx	xx	
	P/M	xx	xx	xx	
TANKER	Income	xx	xx	xx	xx
	L/T	xx	xx	xx	
	L/T/M	xx	xx	xx	
Proj. Ships	Shipdays	xx	xx	xx	xx
Fleet Support	Shipdays	xx	xx	xx	xx
Total Income				xx	xx

*M/T - Measurement Tons

M/T/M - Measurement-Ton-Miles

P/M - Passenger-Miles

L/T - Long-Tons

L/T/M - Long-Ton-Miles

includes: number of shipments, tons, ton-miles, cost, and average cost per ton and per ton-mile. The information for passenger traffic includes: number of TR's, passengers, passenger-miles, cost, and average cost per passenger and per passenger-mile. Average costs are not included in the branch-of-service reports. The Progress Report also includes data on Major Commodity Flow, Cargo Transshipments through CONUS water ports (AIF data, also shown in the annual report portion of the Budget Estimate), and a Commodity Summary of Cargo Transshipments.

TABLE 16. MTMC OPERATIONS INFORMATION

	By Service	Other DoD
Cargo Transshipment Workload (M/T)	xx	xx
Ocean Terminal Tariff Revenue (\$)	xx	xx
Total Revenue (\$)	xx	xx

(e) Unidentified Transportation

We stated earlier that the total obligations in FY 1975 for transportation of persons and things exceeded \$4.7 billion. That total was obtained from the DoD Extract to the Budget of the U. S. Government for FY 1977, by accumulating all obligations for Object Classifications 21.0 (Travel and Transportation of Persons) and 22.0 (Transportation of Things), both direct and reimbursable. Not included were funds appropriated to the President. Table 17 summarizes those obligations by Service; Table 18 summarizes them by appropriation.

TABLE 17. TRANSPORTATION FUNDS, BY DEPARTMENT

	(Millions of \$)		
	Object Classification		
Service	21.0	22.0	Total
Army	571.5	1,188.1	1,759.6
Navy	376.7	981.2	1,357.9
AF	395.8	887.9	1,283.7
Other DoD	34.5	365.2	399.7
Total	1,378.5	3,402.4	4,780.9

TABLE 18. TRANSPORTATION FUNDS, BY APPROPRIATION

	(Millions of \$)		
	Object Classification		
Appropriation	21.0	22.0	Total
Military Personnel	474.5	896.4	1,370.9
Reserve Forces	94.8	.5	95.3
Operations and Maintenance	500.0	1,155.1	1,655.1
Reserve O&M et al	34.7	17.4	52.1
Procurement	.4	126.6	127.0
RDT&E	53.5	12.0	65.5
Military Construction	5.5	4.5	10.0
Family Housing	.2	3.9	4.1
Civil Defense	.8	-	.8
DoD Stock Funds	-	393.7	393.7
Industrial Funds	214.2	792.2	1,006.4
Total	1,378.6*	3,402.3*	4,780.9

*Differences between Tables 17 and 18 due to rounding

Using the data sources described earlier, LMI then computed the costs of transportation reported by the IF transportation agencies, and the non-IF transportation costs reported by MTMC. In addition, LMI was informed by OASD(C) that first destination transportation costs could be considered as Object Classification 22.0 for Procurement; Research, Development, Test, and Evaluation; and Military Construction. The results are summarized in Table 19.

TABLE 19. TRANSPORTATION FUNDS, RECAPITULATION

		FY 75 (Millions of \$)				
		Army	Navy	AF	Other	Total
IF:	MAC	212.3	156.1	470.0	10.2	848.6
	MSC	345.5	228.9	122.9	237.5	934.8
	MTMC	86.0	20.4	20.3	10.0	136.7
	Total	643.8	405.4	613.2	257.7	1,920.1
Non-IF (reported by MTMC)		346.0	272.4	315.5	87.4	1,021.3
1st Dest. Transp.		69.7	21.1	51.3	5.3	147.4
Total		1,059.5	698.9	980.0	350.4	3,088.8
Table 8 Total		1,759.6	1,357.9	1,263.7	399.7	4,780.9
Unidentified Expenses		700.1	659.0	283.7	49.3	1,692.1

To date, LMI has not been successful in obtaining explanations of the unidentified expenses. A resolution of those expenses will be set forth in a subsequent report.

(f) MILSTEP

MILSTEP (DoD 4000.23-M) provides a Pipeline Performance Analysis of supply and transportation in terms of days required to execute certain supply and transportation functions. That analysis appears to offer the most thorough and comprehensive information about the responsiveness of the DoD transportation system.

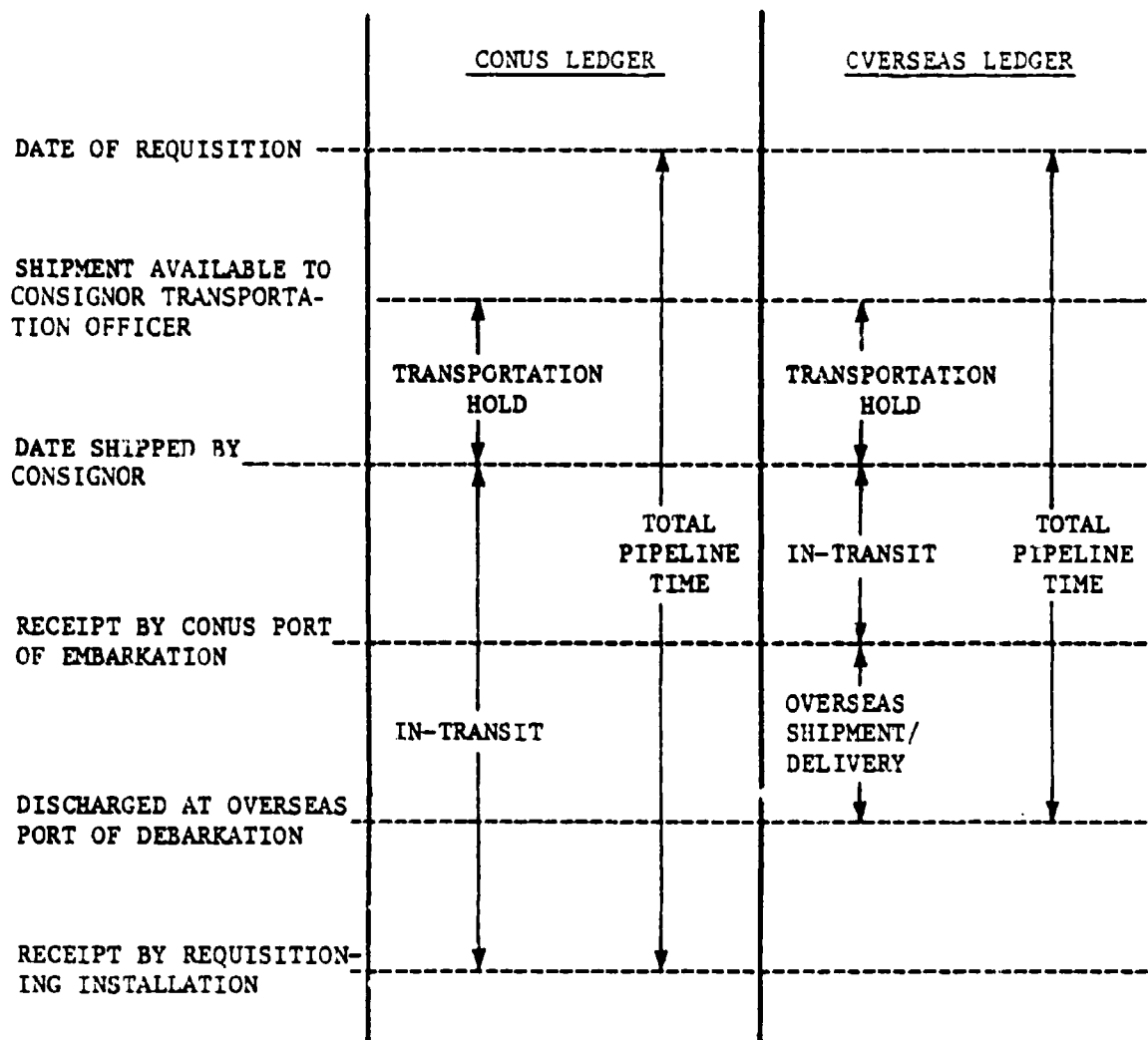
A MILSTEP Ledger using Format 1B¹⁰ is produced by OASD(C) and prescribes transportation time segments shown graphically in Figure 22. Separate ledgers are prepared for Army, Navy, Air Force, Marine Corps, DSA and all DoD CONUS and overseas shipments. The overseas ledger includes, in addition to the CONUS transportation hold and in-transit time segments, the overseas shipment/delivery time segment by three world-wide areas:

- Area 1 - Western Hemisphere
- Area 2 - Europe, Africa, and Middle East
- Area 3 - Far East and Pacific.

Total pipeline times for the overseas ledger are also separated into the same three areas.

¹⁰See Appendix 2, MILSTEP.

FIGURE 22. MILSTEP TRANSPORTATION TIME SEGMENTS



Shipments are categorized by three priority groups (PG): PG 1 contains PDS 01 to 03; PG 2, PDs 04 to 08; and PG 3, PDs 09 to 15.¹¹ Within each PG, the CONUS ledger lists:

- Number of elapsed days
- Report period
- Time segments (shown in Figure 22) by
 - number of lines shipped within days specified
 - cumulative percentage that the number of lines represents of the total for that PG.

¹¹See Appendix 2, MILSTEP.

The Overseas Ledger shows the same information, but omits the number of lines. For each PG, an arithmetic mean ("M/Day") is also printed, representing the average number of days for each time segment.

(g) DSA

DSA transports its materiel almost exclusively via commercial carriers, such as LOGAIR, QUICKTRANS, USPS, UPS, rail, and barges. Except for intra-depot operations, DSA does not operate its own transportation service.

The cost of DSA transportation is borne by the Services according to two methods. In CONUS, Alaska, and Hawaii, DSA applies a surcharge, as part of the unit price, on all the commodities it sells. On overseas shipments of subsistence commodities, DSA pays the transportation cost to the first water or aerial port, and is reimbursed by the Service or Agency receiving the commodity. In all other cases, the surcharge method is used. Transportation costs for fuel dominate, representing about 75% of all DSA commodity transportation costs.

DSA reports several transportation indicators relative to levels of activity. Two of these, contained in DSA's Selected Management Data Report, are: number of GBLs processed, by depot; and BLs in and out, by depot. The remainder, reported in DSA's Management Review, DSAH-C, are: parcel post shipments as a percentage of total shipments, by depot; freight consolidation (number of line items per bill of lading), by depot; and transportation on-time processing (depot transportation plus in-transit), expressed as a percentage for both CONUS and overseas shipments.

2. Budgeting

(a) SDT

ASD(I&L)'s participation in the SDT program budget reviews is limited to assisting ASD(C), who conducts the reviews. ASD(I&L) does not explicitly monitor the performance of the Military Services in their execution of the SDT budget.

In the Army, the Program and Budget Division of the Supply and Maintenance Directorate of DCS (Logistics) is responsible for compiling and reviewing SDT budget submissions, and monitoring SDT budget execution. In the Navy, the Transportation and Warehousing Directorate in NAVSUP develops the entire Navy SDT budget, while in the Marine Corps, the Transportation Section, Facilities and Services Division of the DCS(I&L) performs the same task. In the Air Force, the Plans and Programs Division in the Directorate for Transportation, under the DCS (Systems and Logistics), compiles command SDT budget submissions, but shares program management with the Air Force Comptroller and the Director of Administration within the Chief of Staff's office. Note that the Navy and Marine Corps develop their SDT budgets entirely at

the program manager level, while the Army and the Air Force receive input from subordinate commands. Figures 15 through 17 show budget responsibilities within the Services.

(b) Transportation Agencies

The respective Military Departments budget for the three transportation agencies, the Army for MTMC, the Navy for MSC, and the Air Force for MAC. Budget estimates are prepared by the agencies, and reviewed by the Service comptrollers. Each agency includes in its estimate those IF exhibits specified in the DoD Budget Guidance Manual, DoD 7110.1-M. Subsequently, those estimates are submitted to ASD(C) for review, with ASD(I&L) participation.

The IF exhibits contain detailed accounts of the Agencies' operations. Some of that information is discussed above under 1 (a), (b) and (c), and some also shows up in the Service budget submissions for O&M on the OP-16 Exhibit.

3. Mobility Programming

As stated earlier, SecDef policies require that sufficient DoD-owned transportation be maintained and operated in peacetime to meet emergency and wartime requirements. That requirement immediately raises the questions:

- How much transportation capability is sufficient?
- What mix of transportation (airlift and sealift) should be maintained?
- What emergency and wartime conditions might reasonably arise?

Recently expressed Congressional dissatisfaction with previous DoD efforts to answer those questions has led SecDef to request the JCS to undertake a study of mobility requirements in the NATO environment. That study¹² will be the basis for future mobility requirements, as well as for program/budget proposals to support them. The study group will examine alternative courses of action and will consider various airlift/sealift/prepositioning options, but always reflecting the basic needs of the field commanders. The study schedule calls for completion prior to preparation of the FY 1978 budget.

A distinctive feature of that study is that it represents a programming effort by the JCS and field commanders, rather than a planning effort involving only existing capabilities. The methodology calls for: (1) developing overall combat force requirements based upon the JCS-approved strategy for the threat scenario, (2) producing specific reinforcement requirements, (3) analyzing the costs and risks associated with the reinforcement capability afforded by each mobility option proposed, and (4) recommending ranked alternative mobility programs.

¹²Strategic Mobility Requirements and Programs Study.

Among airlift alternatives to be considered are C-5 wing modification, C-141 "Stretch," air refueling, additional B-747 and C-5 (equivalent) aircraft, and modification of CRAF structure. Sealift alternatives include augmentation by the NDRF and other U.S. and NATO flagships, increased container ship utilization, and enlargement of the U.S. merchant fleet to meet military requirements. Prepositioning alternatives include: prepositioning of overseas materiel configured in unit sets (POMCUS), pre-war reserve stocks (PWRS), restriction to outsize/oversize materiel, and trucks and other vehicles.

CHAPTER FIVE: INSTALLATIONS AND HOUSING

SCOPE AND TRENDS

DoD real property holdings are among the most important of military assets, representing approximately 28 million acres of land and 2,400 million gross square feet of building space. The estimated acquisition cost of these holdings is now over \$43 billion. The Army and Navy hold approximately 30% each, and the Air Force holds about 40% on a dollar basis.

In 1975, there were 4,208 installations and properties in CONUS and 1,733 overseas; 440 in CONUS and 305 overseas were classified as major installations. Although base closings have declined in recent years, pressure to reduce United States military installations in Western Europe and elsewhere could result in a significantly altered base structure in the near future.

DoD satisfies some of its space requirements through leasing; mostly through GSA. GSA leased about 34 million square feet for DoD at a cost of \$183 million in 1976, a reduction of \$35 million from the previous year. DoD is currently trying to reduce leased costs by regional consolidation of activities at leased facilities with activities at non-leased facilities.

The annual military construction budget is now over \$3 billion, excluding construction of family housing. The 1977 family housing budget is another \$1.3 billion, of which \$54 million is for construction of new family housing. The backlog of required military construction has grown steadily, and is now estimated at \$24-25 billion. Although this estimate is subject to some question, the construction budget has not in fact kept pace with inflation.

Construction requirements for pollution abatement and energy conservation programs have cut into the construction budget significantly. After re-evaluating the readiness and mobilization capability of the reserve Components, DoD initiated a phased 10 year program to eliminate a Reserve Facilities backlog of \$1.1 billion in 1971. Even though the Reserve Facilities Construction Program has been increased almost five-fold since 1971 (\$169.5 million in 1975), the backlog has still risen to \$1.5 billion, due mostly to the institution of new missions, priorities, criteria changes, and inflation.

DoD owns or directly controls about 389,000 family housing units and mobile home spaces; another 22,400 units are leased. With these holdings, over \$400 million of the \$1.3 billion family housing budget is needed for maintenance and repair. Interest payments on mortgages also take a substantial portion. Military-owned, controlled, or

leased family housing units are available for approximately 33% of the military families projected for FY 1979. Allowing for average vacancies and inactive units, however, only about 30% of military families are housed in government-controlled facilities. As military salaries have increased, housing construction programs to meet housing needs generated by unaffordable local housing have been de-emphasized. DoD has been looking to the Department of Housing and Urban Development (HUD) for assistance in insuring mortgages for affordable local community housing.

DoD is now emphasizing quick payback projects. The Services are authorized to conduct minor construction projects not otherwise authorized by law, without showing urgency, if the project can be amortized in three years through savings in O&M costs.

Annual base operating costs for DoD installations are estimated at \$11 billion, excluding operation and maintenance of family housing. Of this amount, over 40% is for Real Property Maintenance Activities (RPMA). Over 40% of RPMA costs is devoted to the maintenance of real property, and over 30% to the operation of utilities. Base Operating Support (BOS) costs have increased dramatically, having more than doubled since 1964. Since manpower levels have declined since 1964, the BOS costs per person have increased even more. The costs of utilities and labor are credited for this increase.

The manpower assigned to BOS in DoD has decreased steadily over the past few years, as shown below in Table 20, and is expected to continue to do so as total manpower strengths are reduced.

TABLE 20. MANPOWER ASSIGNED TO BOS FY 1975 TO FY 1978

	FY 75 (Actual)	FY 76	FY TQ (Budget)	FY 77	FY 78 (Authorized)
(thousands of spaces)	588.2	562.4	561.1	523.0	521.4

The trend is to replace some military personnel with civilian employees, and to contract with private industry.

Of particular concern in the area of real property maintenance is the growth of the Backlog of Maintenance and Repair (BMAR). A dramatic increase in reported BMAR in 1974 resulted from a redefinition of these backlogs. The reported FY 1975 level was over \$1.2 billion, and the trend is upward.

Regional consolidation of RPMA is intended to improve support and reduce costs. The Navy, for example, estimates a cost reduction of \$70 million since establishing nine Public Works Centers (PWCs) in 1970. Furthermore, the establishment of local

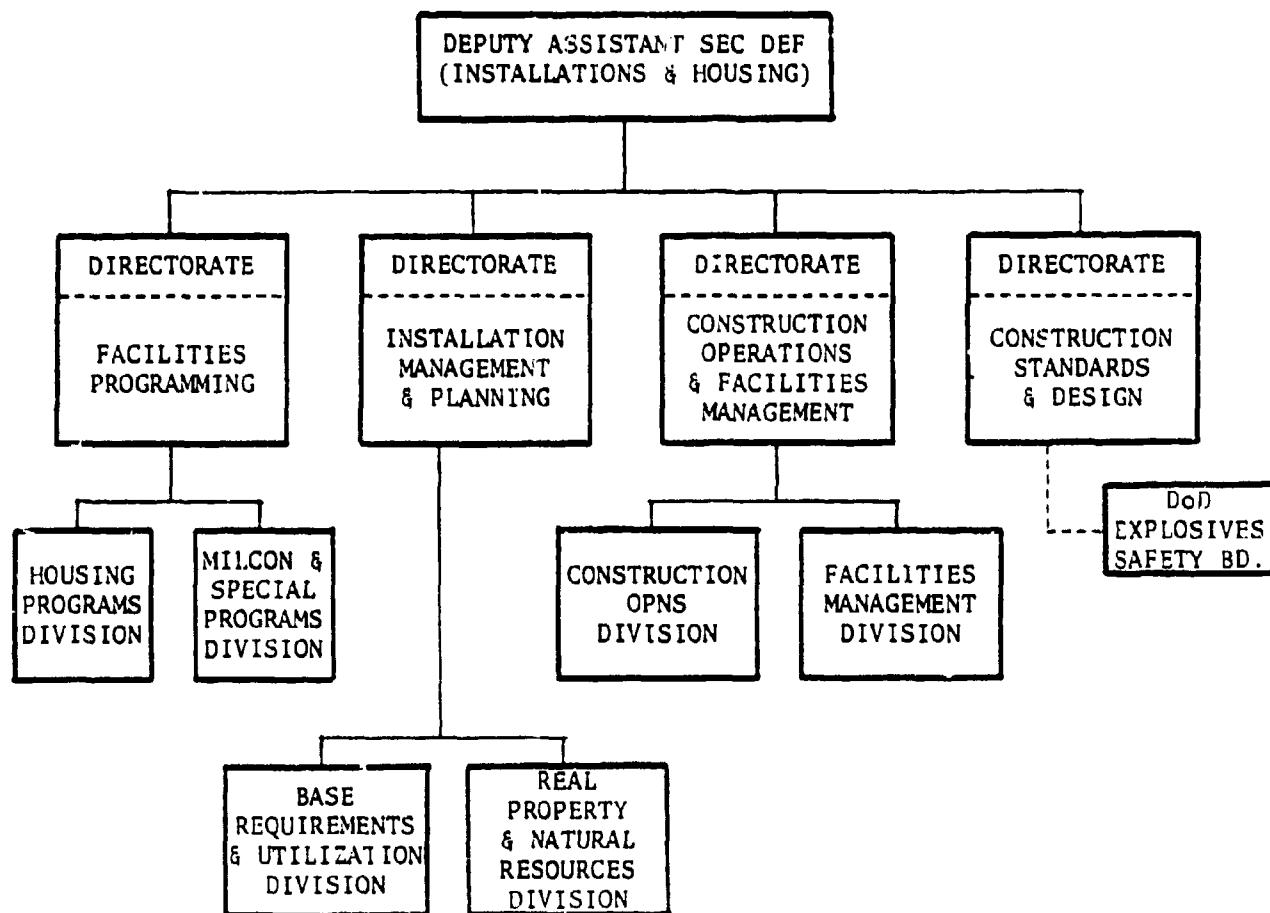
interservice committees to consolidate RPMA at DoD installations in close proximity has resulted in an estimated reduction of over \$71 million since 1970.

ORGANIZATION AND RESPONSIBILITIES

1. OSD

The responsibility for Installations and Housing in OSD lies in the Office of the Deputy Assistant Secretary of Defense (Installations and Housing) [DASD-(I&H)]⁷, who reports directly to ASD(I&L). Within ODASD(I&H) are four directorates: Facilities Programming, Installation Management and Planning, Construction Operations and Facilities Management, and Construction Standards and Design. The DoD Explosives Safety Board is also a direct responsibility of the DASD(I&H), but for organizational purposes reports through the Directorate for Construction Standards and Design. (See Figure 23.)

FIGURE 23. OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE
(Installations and Housing)



Directorate for Facilities Programming: There are two Divisions in the Directorate for Facilities Programming: Housing Programs and Military Construction (MilCon) and Special Programs. In his charter, ASD(I&L) has:

authority to (a) construct family housing and trailer court facilities; (b) accomplish alterations, additions, expansions, or extensions of family housing; (c) enter into rental guaranty agreements; (d) lease housing facilities for assignment as public quarters; (e) determine requirements for units containing more than three bedrooms; (f) exempt inadequate quarters from the requirements for disposition; (g) enter into agreements with the Secretary of Housing and Urban Development; (h) perform such functions as may be authorized in connection with the Wherry projects and with Section 809 and 810 projects; and (i) take such actions for the provision of family housing which are authorized or may be hereafter authorized by annual military construction authorization acts. (DoDD 5126.22, Enclosure 1, p. 2)

Housing Programs provides programming guidance to the Services, reviews the housing programs submitted by them, and prepares a legislative program for congressional authorization. Housing requirements and policies are studied and evaluated, and new policies established as necessary. In support of DoD housing programs, this division manages the Homeowners Assistance Program, develops and maintains the centralized planning, inventory, and cost accounting data systems for housing; and issues leasing, assignment, rental rate, furnishings, housing referral, and substandard housing policies.

By public law, Family Housing funds are appropriated directly to OSD, rather than to the Military Departments. Thus, the managerial control of Family Housing is exercised by DASD(I&H).

MilCon and Special Programs are responsible for the preparation of planning and policy guidance on current and long-range MilCon programs (excluding Family Housing). The division issues annual guidance for the formulation of MilCon programs, reviews the annual budget requests project by project, develops DASD(I&H) construction issues during the POM/Program Decision Memorandum (PDM) process, prepares the draft MilCon authorization bills, and supports the legislation before Congress. It monitors the backlog of MilCon requirements and formulates plans to validate the backlog and reduce its impact on military preparedness. Other policy and review areas covered by MilCon and Special Programs are: nonappropriated funded construction, minor construction, restoration of damaged facilities, emergency construction authorities of the Military Departments, the NATO Infrastructure Program, and SecDef contingency authority.

Construction plans and provisions must be coordinated within OSD and with OMB to ensure their compatibility with Presidential programs. MilCon and Special Programs do not control their programs as tightly as Housing Programs does. Greater responsibility is delegated to the Military Departments and Defense Agencies for routine matters concerning construction programming.

Directorate for Installation Management and Planning: There are two divisions in this Directorate: Base Requirements and Utilization, and Real Property and Natural Resources. Base Requirements and Utilization is responsible for the management, policy, planning and continual review and appraisal of DoD-controlled real property in CONUS and foreign countries. It determines how that real property can best be used and reviews management actions leading to consolidation, realignment, reduction, and/or closure of military installations and activities. Real property utilization is monitored to ensure that property is promptly released for disposition when no longer needed.

Base Requirements and Utilization reviews, evaluates, and prepares recommendations on POMs, PDMs, and Program Budget Decisions (PBDs) affecting military installations. Military Department requests for relocation, realignment, reduction, reorganization, establishment and disestablishment of activities and functions are critically evaluated. Engineering studies and analyses by the Division and the Military Departments are the basis for planning, developing, directing, implementing and making recommendations on the DoD Base Realignment Program.

Real Property and Natural Resources establishes DoD policy for the requisition, management, and disposal of DoD real property world-wide. This policy is based on public law, OMB circulars, precedents, and other guidance. Other responsibilities include: establishment of policy on natural resources management, military operations on the Outer Continental Shelf, Coastal Zone management, and management of DoD's portion of the Federal Building fund. When a base is ordered closed, Real Property and Natural Resources is responsible for reporting excess property to GSA.

Directorate for Construction Operations and Facilities Management: This Directorate is also composed of two Divisions: Construction Operations and Facilities Management. Construction Operations establishes policies for, and monitors the execution of, authorized construction, but is not involved in the PPBS process. Its particular concern is the monitoring of: awards exceeding original cost estimates, the timeliness with which awards are granted, non-MilCon-funded construction, construction in support of contingency operations, and the commercial construction market. Maintaining liaison with construction associations is considered very important.

Facilities Management establishes policies and procedures for managing the DoD real property maintenance, repair, and operations program. To ensure compliance with DoD policy, field surveillance of real property maintenance activities is conducted. This Division emphasizes current DoD objectives (MBOs) and initiatives, such as, promotion and monitoring of RPMA consolidation efforts, validation and reduction of the

BMAR of real property, and implementation of the Energy Conservation Investment Program (ECIP). (ECIP was initiated as a seven-year program budgeted for \$1.35 billion through the MilCon appropriation.)

Directorate for Construction Standards and Design: This Directorate establishes policies, plans, standards, and criteria for construction of facilities. It is responsible for ensuring high quality and uniformity. The orientation of this Directorate is toward architectural and engineering matters. Cost estimation and analysis, base master planning, environmental considerations, and maintenance of regional character are a few of Construction Standards and Design's many concerns. It is charged specifically with establishing construction criteria for bachelor officer quarters, barracks, military family housing, community facilities, medical facilities, runways, waterfront, and other engineering structures. Engineering guidance for the construction of utility plants and systems is another important responsibility.

The DoD Explosives Safety Board is organizationally monitored by the Directorate for Construction Standards and Design. This Board establishes and enforces explosives safety standards, and reviews and inspects ordnance activities for safety.

2. Army

Four levels of installation management are distinguishable in the Army. At the Secretarial level is the Deputy for Installations and Housing. At the Chief of Staff level is the Army Corps of Engineers, headed by the Chief of Engineers. The individual major commands and intermediate levels have installation staffs for coordinating mission assignments with installation requirements. Finally, each installation has its own facilities engineering organization.

Deputy for Installations and Housing: The Deputy for Installations and Housing (Deputy(I&H)) reports to the Assistant Secretary of the Army (Installations and Logistics). He provides civilian control over Army construction, facilities, engineering, real estate acquisition and disposal, base planning, and family housing.

The Deputy (I&H)'s office serves as a liaison between the Army Chief of Staff and the Office of Secretary of the Army, and between the Army Chief of Staff and OSD, on Installations and Housing matters. Program and budget review, and the implementation of objectives and initiatives from the DoD MBO programs are of particular interest to this office. If it does not concur with specific items or policies it reviews, revision is generally required prior to submission to OSD. Although the Deputy (I&H) is delegated some approval authority, he can best be characterized as serving in an advisory and review role. Because the staff is very small, the office relies on the Army Corps of Engineers for detailed information.

Army Corps of Engineers: The organization of the Army Corps of Engineers is depicted in Figure 24. The Corps directs and conducts construction, real estate transactions, and real property maintenance activities, and provides the technical direction of the Army Installation Master Planning Program. Additionally, it undertakes civil works projects. The Corps also plans, directs, and supervises much of the engineering, construction, and real estate services for the Air Force.

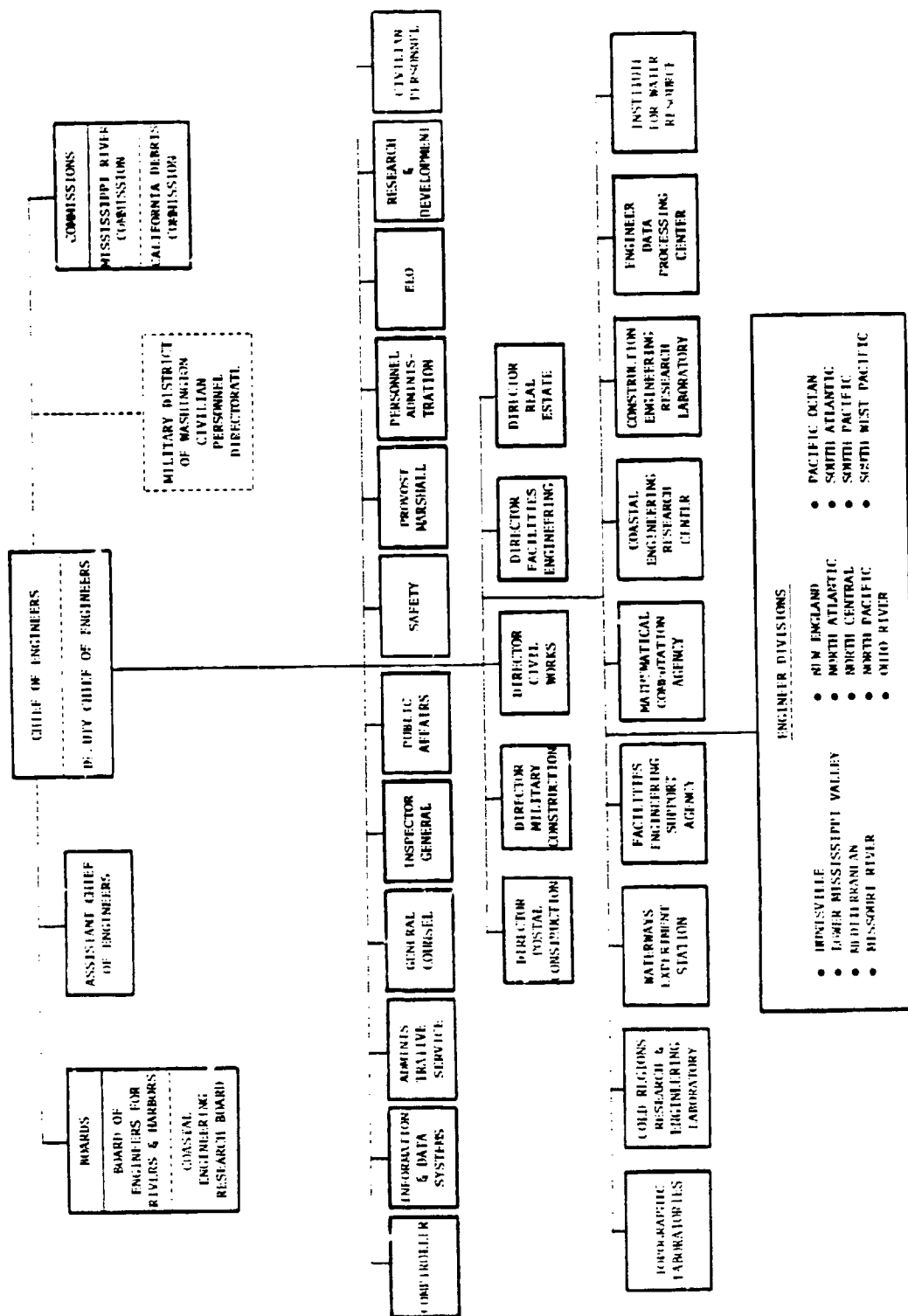
Staff activities of the Corps of Engineers cover a much broader range than in the comparable organizations in the Navy (NAVFAC) and the Air Force (Directorate for Engineering and Services). This is a result of the broader mission of the Corps, in particular the civil works projects, (e.g., Rivers and Harbors, Mississippi River Commission, and California Debris Commission). Unlike the comparable organizations in the Navy and Air Force, the Corps has its own Comptroller, Information and Data Office, legal staff, Inspector General, Public Affairs Office, Provost Marshal, Safety Office, Personnel Administration Offices, and Research and Development Office.

Engineering activities are carried out through a world-wide system of Engineering Divisions. Each of the 13 geographically segmented Divisions (shown in Figure 24) is subdivided into districts. Matters to be coordinated by a major command and the Corps normally would be conducted with a Division Engineer, while matters to be coordinated by a base and the Corps would be conducted with a District Engineer.

Districts and Divisions provide expert design and construction engineering capabilities, turn out complex drawings and specifications, plan and estimate construction projects, award contracts for construction, and perform contract inspection. Representatives of a District Engineer are often assigned to a base as resident engineers during the course of large construction projects. Although the Divisions, Districts, and local Corps offices are manned primarily with civilian engineers, the Division Engineer, District Engineer, and other top supervisory personnel are Army officers.

Major Commands and Intermediate Levels: Development of the MilCon program and management of RPMA are decentralized through the major commands to the installation level. Engineering staffs advise the commanders at each level. Each level guides the next lower echelon of the command, providing information for correlating programs with funds, manpower, and materiel resources. MilCon programs are reviewed by all staff elements involved at a particular level, and are not forwarded to the next higher level without approval of the command element at the lower level. RPMA funds and manpower are allocated through the major commands and intermediate levels to the installations.

FIGURE 24. ARMY CORPS OF ENGINEERS



Facilities Engineer: Finally, there is at each installation a director of Facilities Engineering, or simply, Facilities Engineer. Regardless of the number of organizations occupying an installation, there is only one Facilities Engineering organization. The Facilities Engineer provides tenant organizations with maintenance, utilities, and certain other services, usually on a non-reimbursable basis. In addition to his RPMA responsibilities, the Facilities Engineer participates in base master planning, works closely with the District Engineer on all phases of facilities design and construction, and monitors Army troop construction. All proposed Army facilities must be included in an approved Master Plan before the construction can be programmed.

3. Navy

The Navy's organizational relationships for the management of shore installations differ considerably from the Army's. In the Office of ASN(I&L), there is a Director for Installations and Facilities, but, unlike the Army's Deputy for Installations and Housing, the Director for Installations and Facilities has traditionally been a Navy officer rather than a civilian.

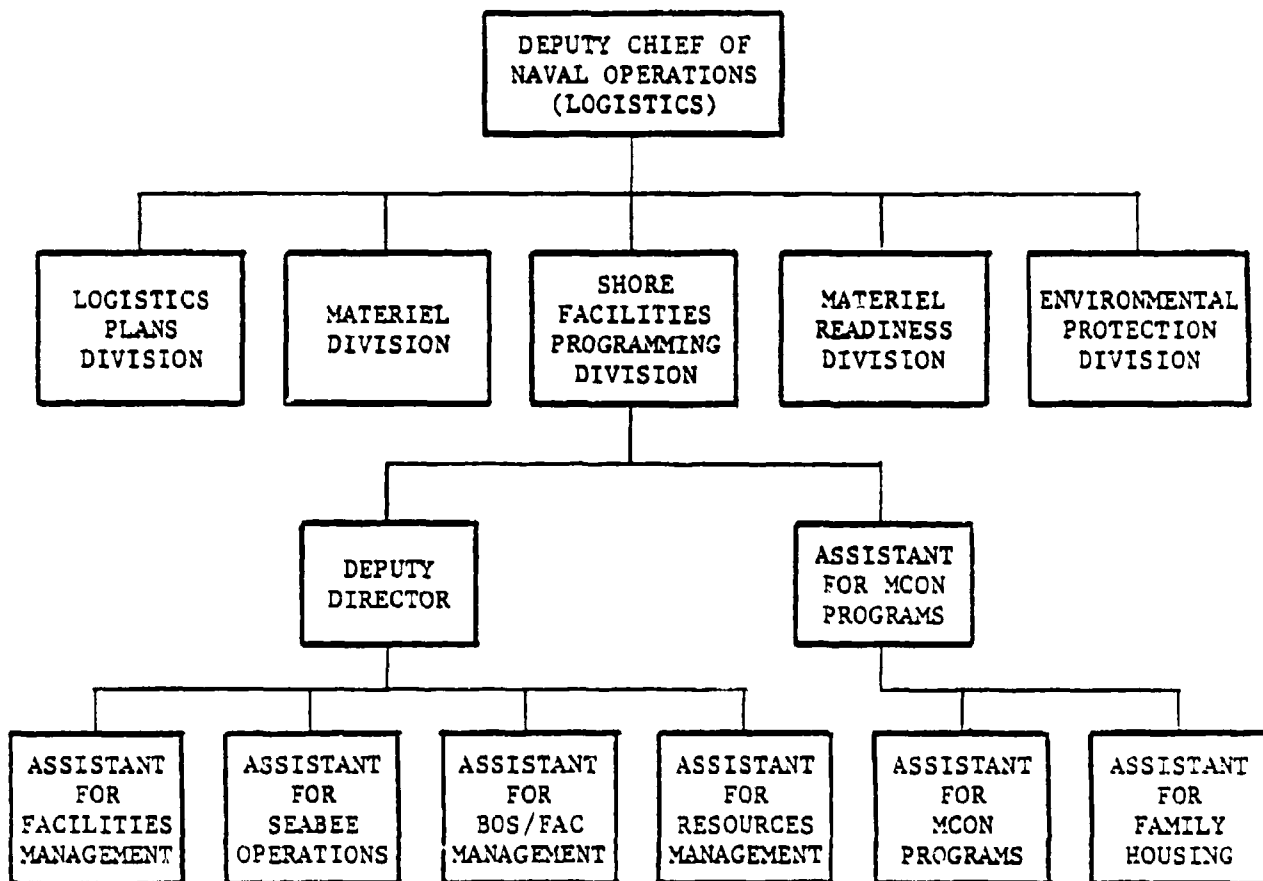
Construction and line management of naval installations are the responsibilities of the Naval Facilities Engineering Command (NAVFAC). The commander of NAVFAC reports organizationally to CNM. However, due to the established programming and budgeting process, CNO is more directly involved with construction and installation management activities than is CNM.

Program content and budget submissions are prepared primarily by the commands with NAVFAC and its Engineering Field Divisions (EFDs) providing technical advice. The Shore Facilities Programming Division in the Office of the Deputy CNO (Logistics) coordinates the process with CNO. The performing units are PWCs, the Public Works Departments (PWDs), and the SEABEES.

Directorate for Installations and Facilities: The Director for Installations and Facilities serves in a capacity similar to the Army's Deputy for Installations and Housing, providing staff assistance to the Secretary of the Navy on installations matters.

Shore Facilities Programming Division: The Office of the Deputy CNO (Logistics) is depicted in Figure 25, which highlights the organization of Shore Facilities Programming. The duties of this division include the formulation of policies, detailed instructions, and manuals that implement or supplement Public Laws, DoD Directives and Instructions, and Secretary of the Navy Instructions. Coordination of the programs and budgets submitted by the commands is also handled here. The division has a close working relationship with NAVFAC, which provides it with technical assistance. Through its

FIGURE 25. OFFICE OF THE DEPUTY CHIEF OF NAVAL OPERATIONS
(LOGISTICS)

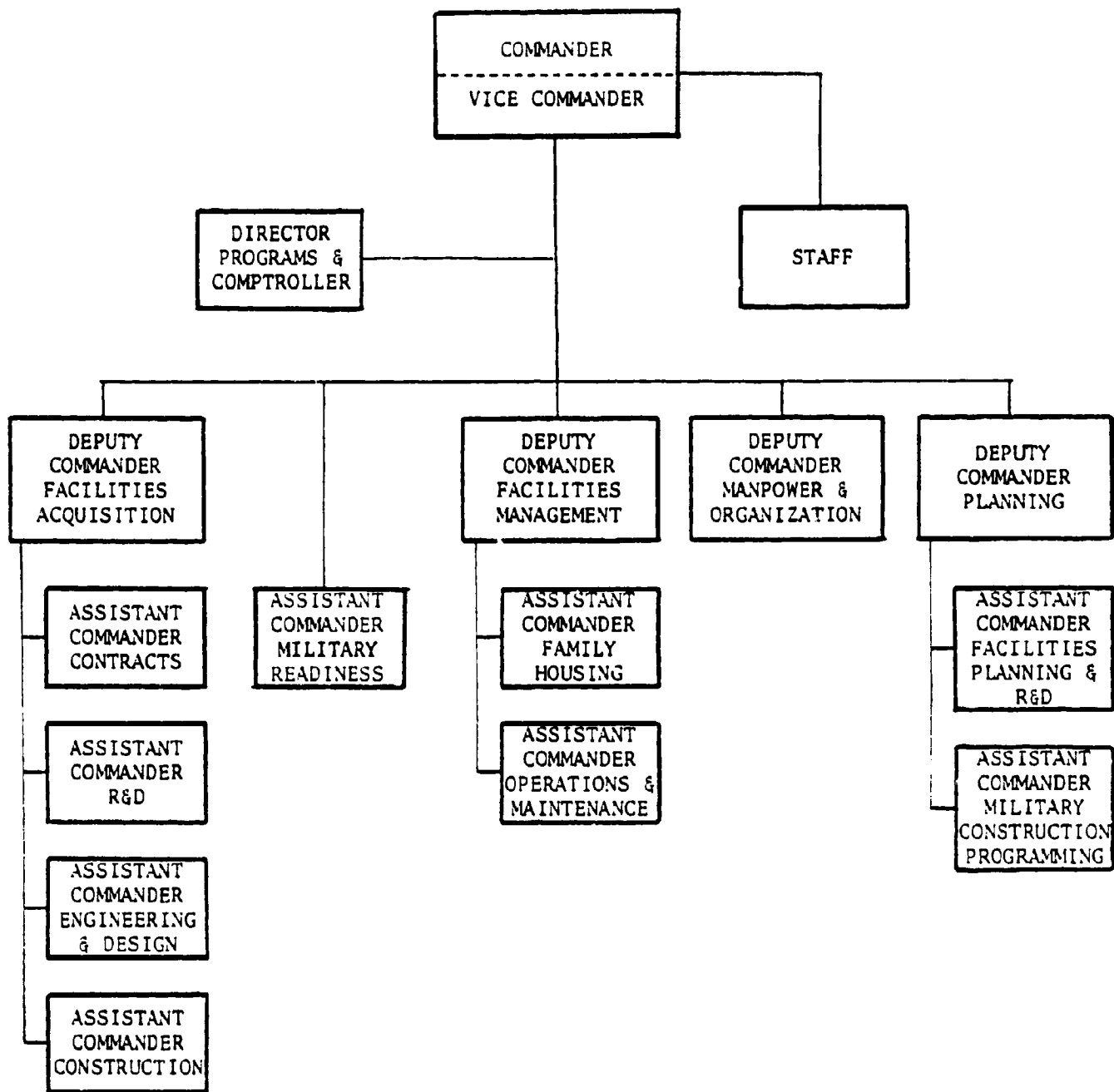


control over funds, Shore Facilities Programming directs the construction, acquisition and repair and maintenance of naval real property.

NAVFAC: The organization chart for NAVFAC is shown in Figure 26. The commander of NAVFAC reports organizationally to CNM. Although CNM does not maintain financial control over NAVFAC, he does monitor its activities. NAVFAC performs the following functions:

- Materiel support for public works, utilities, construction and transportation equipment, and defense against chemical, biological, and radiological warfare
- Maintenance of grounds, buildings, and structures
- Operation and maintenance of utilities and automotive and construction equipment

FIGURE 26. NAVAL FACILITIES ENGINEERING COMMAND



- Planning, design, construction, acquisition, disposal, operation, and maintenance of family housing
- Inspection and approval of design and construction of facilities at privately-operated establishments
- Acquisition, inventory, disposal, and leasing of real property
- Management of Natural Resources Program
- Administration of Environmental Pollution Control Program.

Some of these functions are provided for separately by the Marine Corps and other specifically excluded activities. This list is not complete, changing as new programs are established to implement DoD initiatives.

There are six EFDs in NAVFAC with primary responsibility for overseeing MilCon projects. They also serve as technical advisors for other facilities programs, and, when possible, provide staff support to Naval District Commanders.

Commands and Intermediate Levels: As in the Army, the programming of new construction and management of RPMA in the Navy is decentralized through the commands to the installation level. To a greater degree than in the Army or Air Force, however, the commands (claimants) exercise their approval of projects for programming content and budget preparation. Whereas the other Services have an engineering staff reporting to command headquarters for the purpose of providing technical advice, Navy commands use NAVFAC as their technical advisor. However, all NAVFAC personnel report to NAVFAC headquarters and not to the command headquarters.

PWCs: NAVFAC is responsible for nine PWCs that provide centralized operations and maintenance of facilities to Navy installations in a particular geographical area. Navy PWCs are among the few facilities maintenance activities that operate under an industrial fund concept. A PWC provides operation and maintenance of housing areas, passenger vehicles, trucks and heavy equipment, telephone communications, and utilities. As an installation receives services from a PWC, it must pay for them from appropriated funds. PWCs are manned primarily by civilians, but the PWC commander is a military officer.

PWDs: PWDs do the bulk of in-house real property maintenance at Navy installations. Although the PWD is primarily manned by civilians, the Public Works Officer is a Navy officer, responsible to the commanding officer of the installation where the PWD is located. PWD duties correspond to the duties of the Director of Facilities Engineering in the Army. However, there may not be a PWD at every installation. There may be several PWDs serving a large number of Navy activities in a particular area. These activities are responsible for securing facility maintenance services from a PWD.

Unlike the comparable organizations in the Army and Air Force, a PWD is not assigned to a particular installation.

Base commanders have the prerogative of allocating O&M funds in the amounts and for the projects they choose. Although work done by a PWD is reimbursable, a PWD is not an industrial fund. The charge does not include an assessment for overhead.

Naval Construction Forces (SEABEES): NAVFAC is responsible for insuring that SEABEE units are capable of meeting fleet support missions. They provide funding and engineering design, and advise the Naval Bureau of Personnel on staffing and training requirements.

The basic SEABEE unit is the battalion. There are two types of battalions: Mobile Construction (MCB) and Amphibious Construction (ACB). MCBs build advanced base facilities, provide engineering support for Fleet Marine Units, and may also perform maintenance and repair of facilities and lines of communication in forward areas. ACBs support the landing of infantry divisions by providing troop and equipment movement from ship to shore, and accomplishing related construction.

SEABEE units are assigned to the commands, and are supported by Construction Battalion Centers (CBCs) and Advanced Base Construction Depots (ABCDs). CBCs, under the control of NAVFAC, are the major source of logistical support for MCBs. They perform depot maintenance on automotive and construction equipment; receive, store, and issue advanced base materiel and equipment and Prepositioned War Reserve Stocks; outfit newly commissioned units; and provide training and homeport facilities. ABCDs are established overseas in contingency areas to support units with construction material and equipment maintenance.

4. Marine Corps

The Marine Corps maintains its own capability for facilities operation and maintenance, although it depends on NAVFAC for some aspects of the programming and accomplishment of construction. The Facilities and Services Division, under the Deputy Chief of Staff (I&L), provides central guidance for installation programs. The division must also defend the Marine Corps portion of the Navy MilCon Program.

Under the Marine Corps Maintenance Management System for Real Property, the Commander of an installation is responsible for the maintenance of real property. His Assistant Chief of Staff, G-4 (i.e., Logistics) has a Base Maintenance Officer, a Family Housing Officer, and a Public Works Officer. The Base Maintenance Officer, a Marine Corps officer, is responsible for all real property maintenance on the installation. The Family Housing Officer submits maintenance requirements for family housing to the Base

Maintenance Officer. The Base Maintenance Officer provides the services required on a reimbursable basis. The Public Works Officer, a Navy Civil Engineering Corps officer, manages the operation of utilities. He also acts as the Resident Officer-in-Charge of Construction (ROICC). In this capacity, he handles project development, contract administration, and construction inspection.

The small number of Marine Corps installations allows for close monitoring and control of real property management by Headquarters. Cost accounting reports are reviewed semi-annually, and annual staff visits are conducted to inspect management techniques and validate backlogs. Although the Marine Corps does not have construction units comparable to the SEABEES, it does provide combat engineer support through Engineer Battalions. These battalions are organic to a Marine Division and not organized under a central engineering command.

5. Air Force

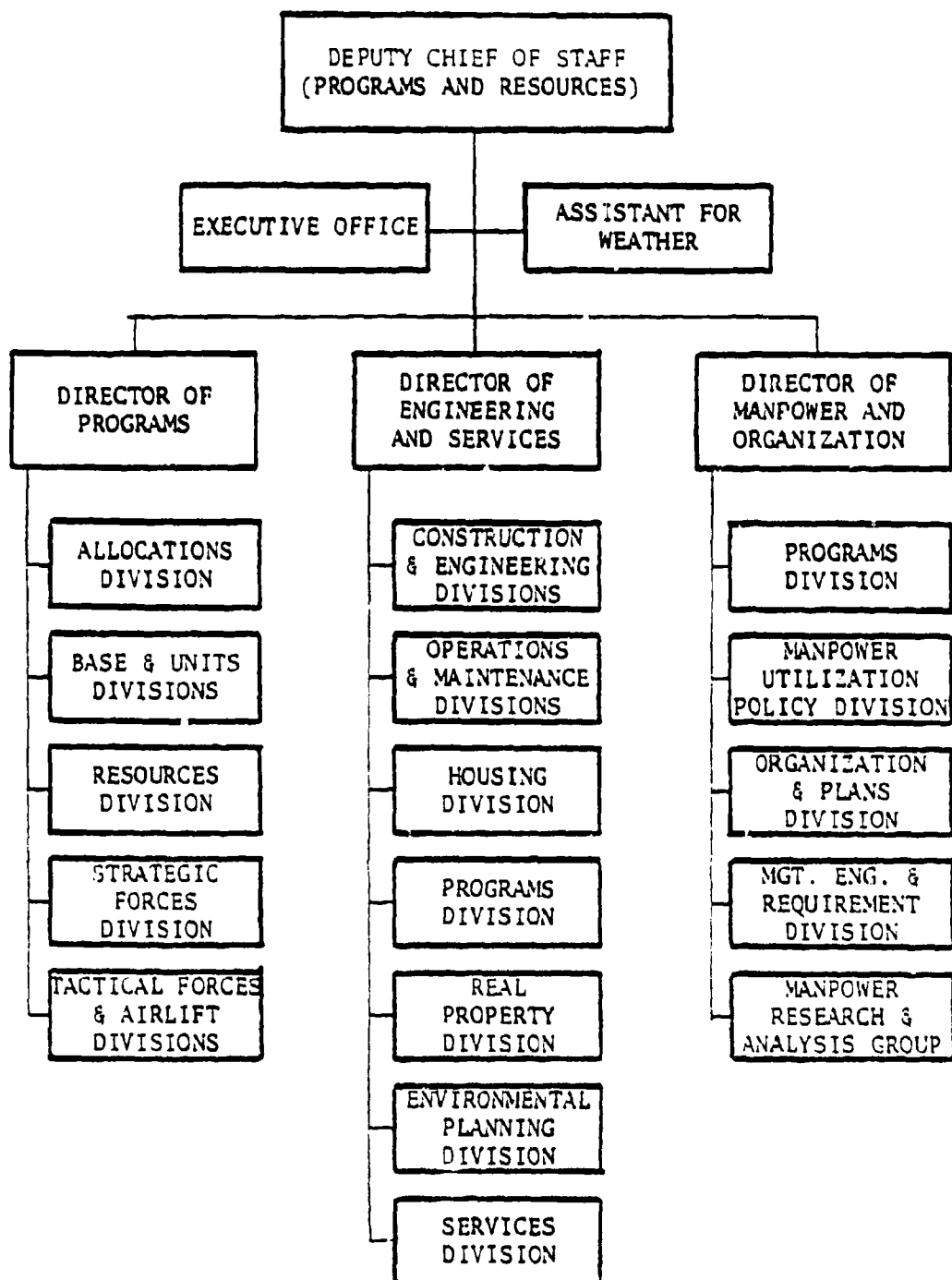
As in the Army, four distinct levels of management can be identified in the Air Force. At the Secretary of the Air Force level is the Deputy Assistant Secretary of the Air Force (Installations). At the Chief of Staff level is the Directorate for Engineering and Services under the Deputy Chief of Staff (Programs and Resources). The major commands and most of the intermediate commands have engineering staffs. Finally, each installation has a Base Civil Engineer organization.

Deputy Assistant Secretary of the Air Force (Installations): This office provides essentially the same staff services as the Army's Deputy for Installations and Housing, and the Navy's Directorate for Installations and Facilities. The office serves a policy-making, advisory, and review function.

Directorate for Engineering and Services: This Directorate has primary responsibility for: Air Force construction operations world-wide, architectural and engineering services, MilCon programs, maintenance and repair of real property, provision of utilities, and management of real estate. The organization of the Directorate is depicted in Figure 27 under the DCS (Programs and Resources). Its responsibilities are similar to those of the Army Corps of Engineers, but much smaller in scope. A large portion of Air Force construction projects is given to the Army Corps of Engineers and NAVFAC for management.

A Civil Engineering Center is located at Wright-Patterson AFB, Ohio. This center provides for the training and deployment of Prime BEEF (Base Engineer Emergency Forces), and the coordination and monitoring of activation, training and equipping of REDHORSE (Rapid Engineer Deployable Heavy Operations Repair Squadrons, Engineer) squadrons.

FIGURE 27. AIR FORCE OFFICE OF THE DEPUTY CHIEF OF STAFF
(PROGRAMS AND RESOURCES)



Prime BEEF teams are designed to respond immediately to emergencies resulting from natural disasters or military contingencies. Selected military personnel from Base Civil Engineer organizations world-wide are designated members of Prime BEEF teams. These teams train together, and are equipped to deploy to any area where an urgent need arises. REDHORSE squadrons are designed to be a quick-reacting repair force, organic to the Air Force. They can also assume limited construction projects.

Air Force Regional Civil Engineers (AFRCE) are located throughout CONUS. These offices act as Air Force liaison with construction agencies managing Air Force construction projects, such as the Army Corps of Engineers and NAVFAC. They also assist the major commands, intermediate commands, and installations with technical problems. Overseas, the AFRCE function is provided for in the major commands.

Major and Intermediate Commands: Each of the major commands, and most of the intermediate commands have a civil engineering staff. The Command Civil Engineer is responsible for:

- Base facilities planning and programming for active and proposed missions
- Engineering, design, construction, repair, and alteration of facilities
- Operation and maintenance of bases
- Real estate acquisition, control, and disposition
- Fire protection.

Unlike the Army Facilities Engineer or the Navy Public Works Officer, the Air Force Base Civil Engineer reports to the commander of the principal occupant of a base, usually an Air Force Wing. The command civil engineer staff, therefore, coordinates the activities of the Base Civil Engineer.

Base Civil Engineers: The Base Civil Engineer (BCE), or simply, Base Engineer, represents the lowest echelon of command in installations management. He performs the day-to-day operations, maintenance, and repair of facilities and other real property.

The Base Engineer is somewhat comparable to the Army's Facilities Engineer and the Navy's Public Works Officer, but the organizational relationships are considerably different. The Base Engineers are composed of a considerably higher percentage of military personnel than are the comparable organizations in the other Services. Approximately half of the BCEs are military. Among other things, these military personnel are needed to man the Prime BEEF teams.

MANAGEMENT AND CONTROL

1. Installations Planning

Many factors enter into the planning of military installations. Among the more important are: the number of bases and their location, the size of each base, the

missions assigned to each base, and the cost of supporting each base. These factors are determined by military requirements for facilities and the judicious utilization of these facilities. The economic impact on local communities and environmental protection considerations are also involved.

Managerial Control: An important tool used in the management of DoD real property is the Inventory of Real Property (DoDI 4165.14). This inventory is designed to be a basic source of information on the "status, cost, capacity, condition, use, maintenance and management" of DoD Service and individual installation real property. It consists of an individual record of "every item of real property and real property improvement owned, leased or otherwise acquired or controlled" by DoD, including installation name, location, type (industrial or non-industrial), status, data acquired, function, contract, operator and inventory data. The inventory data are recorded by category codes as specified in DoDI 4165.3. There are nine facility classes which are broken down further into category groups and basic categories.

A key management control principle in DoD is the delegation of authority in the acquisition, disposal, leasing, and retention of real property (DoDD 4165.6). DoDI 4165.12 specifies actual delegation of approval authority, requiring ASD(I&L) approval of all DoD real property transactions in excess of \$50,000. Requests for approval must be accompanied by supporting justification. "All withdrawals, permits, reservations or restrictions of public domain in excess of 500 acres for use for a period longer than one year" must also be submitted for approval.

DoDI 4165.12 also provides for required reporting to Congress. Section 613, Public Law 89-568 requires a full report to Congress of any "proposed closure or complete deactivation of any installation located in the United States or Puerto Rico" which has more than 250 permanently assigned personnel. Title 10, United States Code, Section 2662, further prescribes that Military Departments may not enter into real property transactions exceeding \$50,000 until 30 days after submitting a report explaining the transactions. Additionally, a summary report of all transactions between \$5,000 and \$50,000 must be submitted annually to the Congressional committees, with a copy going to ASD(I&L). The Acquisition and Disposal reports, however, must receive ASD(I&L) approval before the Departments can forward them to Congress. Once ASD(I&L) has approved the reports, the department must notify DASD(I&H) if it withdraws them or defers their submission to Congress for more than 30 days.

DoDI 4165.40 specifies the format for recording real property transactions. DoDD 4165.20 sets policy for determining whether real property should be retained. As part of the implementation of this Directive, each Service is required to develop an integrated long-term facilities plan.

To provide more systematic analysis of basing decisions, DASD(I&H) has established the Defense Installation Management Evaluation and Planning Program (DIMEPP). Some of the intents of DIMEPP are to:

- Develop an installation classification system
- Establish comparable efficiency measures for installations
- Develop improved management techniques and procedures.

Through DIMEPP, DASD(I&L) hopes to handle such problems as programming of regional complexes, reduction of DoD leased costs, and development of a long-term installations plan.

Selected Managerial Issues: DoDD 5410.12 establishes an Economic Adjustment Program "to minimize the economic impact on communities resulting from changes in defense programs." It supports Presidential memoranda that set up an interagency Economic Adjustment Committee including members from throughout the federal government. To assist SecDef in carrying out his duties as chairman of this committee, an Office of Economic Adjustment is established under the jurisdiction of ASD(I&L).

DoDD 6050.1 amplifies DoD policy in accordance with Public-Law 91-900, "National Environmental Policy Act of 1969," which requires the inclusion of environmental considerations in all government decision-making. DoDD 5100.50 assigns responsibilities for managing environmental programs. ASD(I&L) is responsible for preventing or correcting environmental pollution through: programming, planning, and design of facilities; maintenance, operation, and repair of facilities; military construction and architectural considerations; and effective land management and natural resources conservation.

In connection with ASD(I&L)'s environmental protection responsibilities, DoDD 5500.5 sets broad policies for: financing conservation programs, managing soil and water resources, managing forests and wildlife, and controlling pollution and the use of pesticides. Public access to military installations is urged. DoDI 4170.6, "Natural Resources-Fish and Wildlife Management," DoDI 4170.7, "Natural Resources-Forest Management," and DoDI 4170.8, "Natural Resources-Soil and Water Management" expand on DoDD 5500.5 by providing specific procedures and reporting requirements.

2. Construction

Most DoD construction is performed by contract. However, all construction projects are managed by DoD organizations, primarily the Army Corps of Engineers and NAVFAC. Navy SEABEES and Air Force REDHORSE Squadrons supply the troop construction capability required for contingency purposes. The Army Corps of Engineers

also maintains a troop construction capability, and the Marine Corps has its engineer battalions, organic to Marine divisions.

Some construction can be better accomplished in-house than by contract: overseas construction, modular construction, and horizontal construction (parking lots, roads, recreation fields, etc.). These projects serve as training for troop construction units.

Managerial Control: The principal control over DoD construction is the delegation of authority to approve projects. DoDD 5126.29 gives ASD(I&L) eight specific authorities with respect to construction projects. For example, he can approve DoD Component requests for rehabilitation or replacement of damaged or destroyed public works. He can also determine the necessity for exceeding the authorized amount of the construction or acquisition of a project by up to 25%. Anything over 25% must be submitted to Congress. If "security considerations, new weapons developments, new and unforeseen research and development, or improved production schedules" dictate the need for unauthorized construction, ASD(I&L) can so approve. Projects for which the planning and design costs alone are expected to exceed \$225,000, but which have not as yet been authorized, must be initiated by OSD (and, in particular, the MilCon and Special Programs Division under DASD(I&L)). Except for projects that fall under the provisions of the minor construction program, that can be financed from other than MilCon appropriations, or that qualify for non-appropriated funded construction projects, all projects must be authorized by Congress.

Under Title 10 United States Code 2674, construction projects of \$75,000 or less may be financed from funds available for O&M. These funds are generally budgeted through the minor construction portion of the RPMA account.

The minor construction program gives approval authority to SecDef and the Secretaries of Military Departments for urgently required construction projects not exceeding \$400,000. Funds for this program come from the MilCon appropriation when projects exceed \$75,000, but project authorization is not required. A statement of urgency is required for projects over \$75,000, unless the Secretary of a Military Department determines that the project will result in a savings in O&M costs exceeding the cost of the project within three years. Justification of the three-year amortization must include an economic analysis as prescribed in DoDI 7041.3. Under the minor construction program, the Secretary of a Military Department must approve all projects exceeding \$75,000 and SecDef must approve all projects exceeding \$200,000.

The Reserve and Guard minor construction program consists of those projects not exceeding \$100,000 and funded from MilCon appropriations (project authorization is

not required). Essential projects not exceeding \$50,000 may be accomplished from funds available for operations and maintenance. Any Reserve or Guard project exceeding \$100,000 requires OSD approval and Congressional notification.

A flow diagram depicting the delegation of authority for approving construction projects is presented in Figure 28. This figure does not include the authorization procedures for family housing. The delegation of authority within a Military Department may vary considerably, due to differences in organizational relationships.

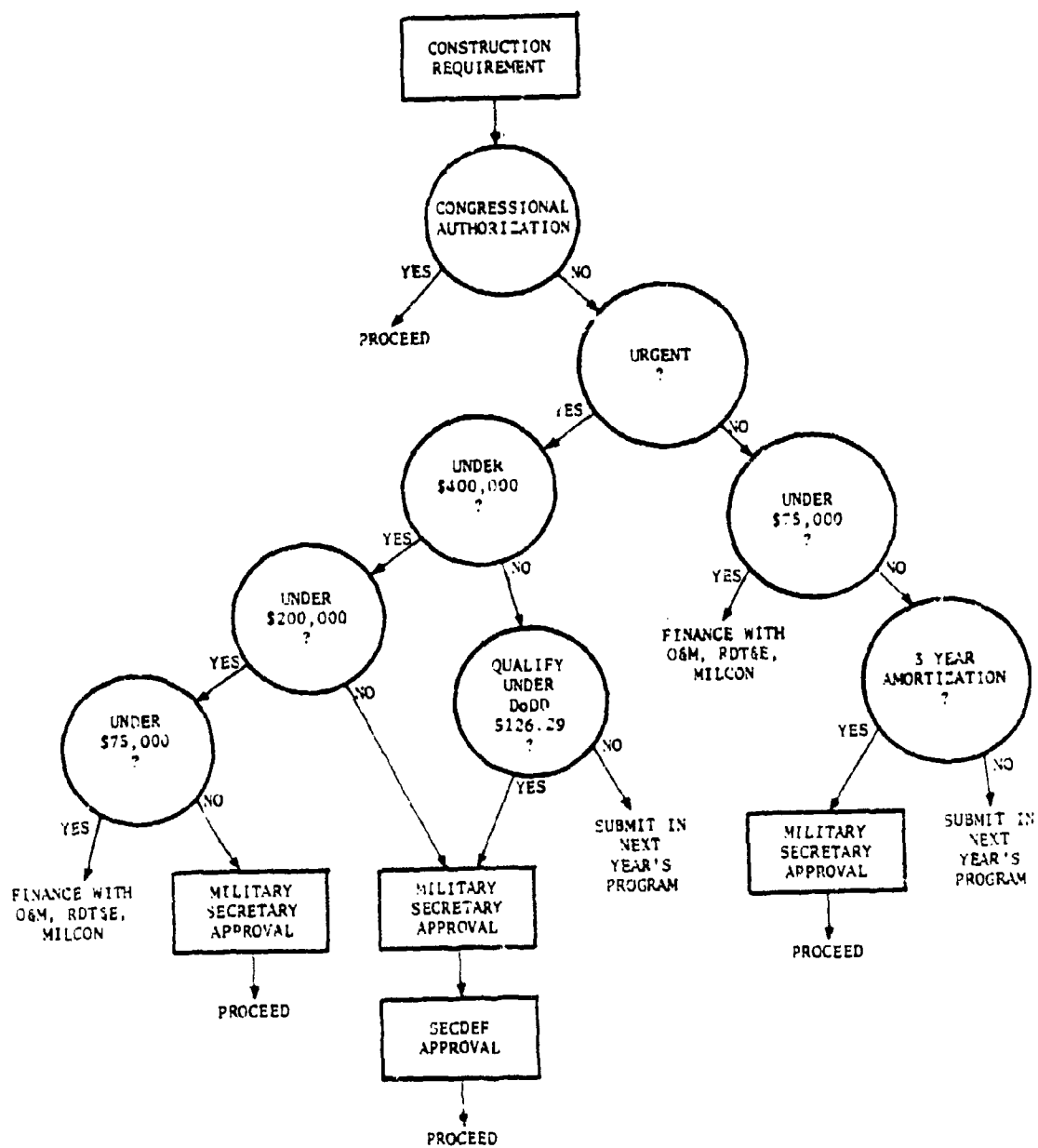
Most construction projects receive funding through the MilCon appropriation. Although the planning and programming of military facilities goes on for approximately a year before the Military Construction Programming Guidance (MCPG) is sent to the Military Departments, this guidance initiates the formal preparation of the MilCon Program. The Directorate for Facilities Programming prepares the MCPG, which enunciates specific policy for selecting and costing projects. Each Military Department is required to submit its program by the end of September. The Directorate for Facilities Programming, the Directorate for Military Construction in OASD(C), and OMB all review these submissions.

The Services defend their programs and specific projects during hearings scheduled between October 1 and December 1. OMB, although informally participating in the OSD review process, officially receives the DoD MilCon Program in December. The Directorate for Facilities Programming, in cooperation with the Directorate for Military Construction, prepares PBDs when they have reviewed the submissions and made any necessary changes. The final program is then submitted to Congress in early January.

Each Service prepares its MilCon Program through a slightly different process. In the Army, the commands coordinate preparation with the Facilities Engineers. Each Facilities Engineer has responsibility for the Master Plan of his installation from which all construction projects must originate. The commands determine their particular requirements, and choose those projects best meeting them. The Districts and Divisions of the Army Corps of Engineers advise the commands, whose submissions are then reviewed by the staff of the Chief of Engineers before continuing to the staff of the Secretary of Army.

In the Navy, on the other hand, the commands perform construction programming, with NAVFAC primarily providing technical advice. Navy claimants submit their requests to the Shore Facilities Programming Division, and thus share less responsibility for the MilCon Program with NAVFAC than the Army commands do with the Army Corps of Engineers.

FIGURE 28. MILCON APPROVAL PROCESS
(Excluding Family Housing)



In the Air Force, the civil engineering staffs of the commands develop the construction program. The BCE provides major input to the program, but the Comprehensive Plan (formerly Master Plan) from which it is derived is the responsibility of the commands. The Air Force base arrangements require greater coordination of the program at the Air Staff level. The Army Corps of Engineers provides the Air Staff and commands with advice on construction programming.

When the Directorate for Facilities Programming receives the MilCon Programs of the Military Departments, it assigns one of four priority rating codes to each project: Minimum Essential, Highly Desirable, Desirable, and Deletions. Projects are also identified as to contribution: New and Expanded Missions, Current Missions, or Replacement and Modernization. Normally only the "Minimum Essential" and "Highly Desirable" projects will be included in the program. "Highly Desirable" projects will, as a rule, be grouped as an alternative to the PBD document. This allows SecDef to defer such projects if he considers such action necessary.

At this point, only approval and funding aspects of construction have been considered. Once authorized, construction projects enter the execution phase. Contracts are awarded by DoD Components in accordance with the Armed Services Procurement Regulation (ASPR). Two indicators currently being used by DASD(I&H) and his staff to monitor the awarding of contracts are: average number of bids per contract, and percentage of authorized projects awarded. An increase in bids per contract, or a high percentage of authorized projects awarded early in the fiscal year are regarded as favorable indications. If changes are necessary during either the bidding or the actual construction phase of a particular project, the MilCon Program may be adjusted according to the procedures stated in DoDD 7150.3.

Another method of managing military construction (and family housing) is the establishment of guidelines for design and conduct of construction projects. In OSD, this is the responsibility of the Directorate for Construction Standards and Design. DoDI 4270.1 authorizes publication of a manual, setting broad standards for specific categories of facilities. At the Service level, on-site inspections are conducted by both the Department Secretary's staff and Chief of Staff personnel, as well as by the commands themselves. Criteria for base master planning are also established.

Finally, the Directorate for Construction Operations and Facilities Management, under the DASD(I&H), maintains a close liaison with the construction industry and its industrial associations. Through these contacts, DASD(I&H) can acquire information on the construction market and on individual contractors.

Selected Managerial Issues: Two current issues are particularly significant for the MilCon Program: pollution abatement and energy conservation. Funds for facilities or modifications to reduce pollution or energy consumption come mostly from the MilCon appropriation. The Military Departments submit requests for these programs separately, and assign projects by facility category. In recent years, the Departments have been instructed not to reduce these programs.

Pollution abatement policy is covered in DoDDs 5100.50 and 6050.1, as discussed previously. DoDI 4120.14 provides further guidelines for pollution control projects. Options for meeting air and water quality standards, for example, must be analyzed for cost-effectiveness before decisions are made.

DoDI 5126.44, "Management Strategies for Department of Defense (Installations and Logistics)," has a section devoted totally to "Energy Resources." It gives ASD(I&L) responsibility for reviewing the requirements of all U. S. Forces for energy under current and emergency conditions, and relating this requirement to the world-wide availability of energy supply. ASD(I&L) has a Directorate for Energy reporting directly to him for the management of the DoD Energy Conservation Program. Considerable interaction is required between this Directorate and the various Directorates under DASD(I&H).

3. Housing

Military housing is provided by a number of sources: DoD-owned or controlled family housing, bachelor quarters, and commercially-provided housing. Bachelor quarters are constructed from MilCon funds, and maintained by Service O&M funds. DoD-owned or controlled family housing is completely supported by the Family Housing Program (FHP). The FHP has three primary purposes: (1) assistance in locating and utilizing privately-owned family housing, (2) acquisition of DoD family housing property, and (3) management of DoD family housing property.

Related to, but separate from, the FHP is the Homeowner's Assistance Program which provides benefits to DoD military and civilian personnel for losses incurred when a military installation has been ordered wholly or partly closed. ASD(I&L) is delegated responsibility for implementing the program. The Homeowner's Assistance Program is described in DoDD 5100.54 and DoDI 4165.50; its management will not be discussed further here.

Managerial Control: The FHP is controlled by DASD(I&H). Unlike other appropriations, family housing funds are appropriated to OSD for allocation to the DoD Components. This allocation authority is delegated to DASD(I&H). To maintain control over the program, a separate cost accounting structure is established in DoDI 7220.16.

DoDD 7150.4 established the FHP and broad policy for all DoD family housing. DoDI 4165.45 specifies policies, procedures, and criteria for determining housing needs and programming family housing construction. When the local housing market can provide suitable housing, DoD sponsored housing is not to be programmed. To avoid depressing the local housing market, military housing is not normally programmed to exceed 90% of the requirement in the United States (80% in foreign countries). DoDI 4270.21 establishes policy and procedures for the upkeep of DoD family housing.

The Bachelor Housing Program (BHP) was established by DoDD 5100.67. ASD(I&L) is responsible for implementing the BHP, but its funds (unlike those of FHP) are allocated through MilCon and O&M appropriations. DoDI 4165.47 establishes standards for bachelor housing. DoDI 4165.54 sets forth procedures for determining bachelor housing requirements for justifying projects to be included in the MilCon Program and FYDP. Generally, BHP programming does not exceed 90% of permanent bachelor personnel, to preclude any over-building that could result from future changes in force strengths. Temporary and transient personnel, however, are normally programmed at 100% of the average requirement.

Selected Managerial Issues: Isolated incidents of abuse of funds for general and flag officer quarters improvements, maintenance, and repair have necessitated stricter monitoring. Operation and maintenance of these quarters are required to be reported as a separate housing category (DoDI 7220.16). "This visibility on expenditures charged to individual quarters will enable the occupant to participate personally in cost control measures" (DoDI 4270.21).

Increasing pressure is being put on HUD to insure high-risk mortgages in communities surrounding installations needing housing units. HUD should be able to provide housing with no DoD financial responsibility or liability under the Special Assistance Programs. However, HUD and Congress have traditionally rejected the expansion of these FHA Programs to assist in meeting military housing needs. As a result, DoD has had to provide its own programs.

4. RPMA

The DoD Real Property Maintenance Activities (RPMA) Program was established by DoDD 4165.2. RPMA has four accounts: operations of utilities, maintenance and repair of real property, minor construction, and other engineering support. Support services included in the RPMA Program are: fire prevention and protection, entomology and pest control, refuse collection and disposal, and custodial services. RPMA is provided either in-house or by contract, and is managed by the Facilities Engineer (Army), PWDs/PWCs (Navy), Base Maintenance Office (Marine Corps), or BCE (Air Force).

RPMA is generally managed at the lowest, i.e., base, level. RPMA account for over 40% of BOS, and include that category of BOS comprising services which maintain the installation facilities, e.g., building and road construction and repair, police and fire protection, trash and sewage disposal, utilities operation.

Managerial Control: Control over the RPMA Program is provided by policy guidance, accounting and reporting requirements, programming and budgeting procedures, interagency communications, and, in some cases, industrial funding. DoDD 4165.2 establishes broad objectives and policies, and some specific guidance and requirements. DoD Components, for example, are required to report annually (in conjunction with the annual budget requests) on the use of resources against their five-year plans. As part of a comprehensive appraisal system, OSD officials are directed to inspect selected installations.

DoDD 4165.2 also establishes the Real Property Maintenance Council under the chairmanship of the DASD(I&H). This Council includes members from each DoD Component, and monitors and evaluates the RPMA Program. The Real Property Maintenance Council permits an exchange of information between the Military Departments and Defense Agencies; one of its achievements has been the Joint Service Program and Budget Working Committee. Although no consensus on a common Program and Budget procedure for RPMA could be reached by the Services, the Committee's final report raised many questions and identified specific problems in the management of RPMA. As a result, significant changes have recently been instituted.

To make sure of management effectiveness in the RPMA Program, each DoD installation must prepare work plans with provision for identifying and validating total work requirements. A record is maintained of validated unfinanced requirements. All valid unconstrained requirements are to be placed in a priority order to permit optimum use of resources.

Work control systems are designed to ensure that resources are allocated in accordance with the work plan. Approval of work is delegated to the lowest organizational level consistent with prescribed limitations. One of these limitations applies to repair projects exceeding \$300,000, and repair projects between \$50,000 and \$300,000 where the repair cost exceeds 50% of the replacement cost of the affected facility. In these cases, approval by the Secretary of the Military Department, or his designated Assistant Secretary, or the Director or Deputy Director of the Defense Agency concerned is required. Another limitation requires ASD(I&L) approval for use of more than \$15,000 of family housing maintenance funds on one dwelling unit in a twelve-month period. A job system, including output measures, is used to ensure that charges are properly made to cost areas, and are related to outputs.

Finally, engineered performance standards are used where possible for estimating labor requirements and scheduling work. The Guidelines of DoDD 5010.15, "Defense Integrated Management Engineering System (DIMES)" apply here.

Broad guidelines on the level of maintenance to be performed on a facility are consistent with the life cycle costing concept. Facilities to be used for more than ten years must be maintained to ensure their usefulness for an indefinite period. Facilities to be used from three to ten years must be maintained consistently with their projected useful life. Facilities to be used less than three years must be maintained at a minimum acceptable level. The guidelines of DoDD 5010.8, "DoD Value Engineering Program" apply here.

The only fully industrially-funded RPMA activities are the Army's Facilities Engineer Organization (under DARCOM), and the Navy PWCs. DoDD 7410.4, "Regulations Governing Industrial Fund Operations" provides guidelines for the management of this method of pricing. As more and more RPMA functions are consolidated regionally, it can be expected that more IFs will be established.

A substantial portion of RPMA is contracted out. Contracting for RPMA services is accomplished in accordance with the policies of DoDD 4100.15, "Commercial or Industrial Activities."

Selected Managerial Issues: A primary RPMA issue is the trend towards consolidation. Consolidation efforts are underway in the Oahu, San Francisco, San Diego, San Antonio, Seattle-Tacoma, Washington, D. C., and Okinawa areas. Other individual projects are underway at McGuire AFB-Ft. Dix, and Pope AFB Ft. Bragg. Consolidations are required to make maximum use of Interservice Support Agreements (ISSAs), joint service contracts, and other cross-servicing techniques. Use of ISSAs is described in DoDD 4000.19. The programming and budgeting procedures for consolidations are described in DoDD 7150.5.

Joint Utilities Services Boards (JUSB) contribute to consolidation efforts by providing a cost-effective organization to solve mutual utilities procurement problems. There are seven JUSBs covering specified geographical areas.

The increasing concern throughout the federal government about solid waste management has led to a new responsibility for RPMA. A DoD Directive has recently been developed to implement Solid Waste Management Guidelines, mandatory for all government agencies under the Solid Waste Act. When signed by SecDef, this Directive will attach another responsibility to the various facility engineer (or equivalent) organizations.

REPORTING, ACCOUNTING, AND BUDGETING

Reporting and budgeting systems for the previously discussed installations activities represent important management methods for maintaining control. Supported by accounting procedures, these systems are also a primary source of documented information. Each Military Department has a different system for collecting data needed to meet reporting and budgeting requirements. As previously noted, attempts at uniformity have not been completely successful, partly because the Services have different missions, and hence different perspectives.

Some of the reports have previously been mentioned in conjunction with Section C. The following discussion covers the more important reports and the accounting systems that support them, from an OSD managerial point of view.

1. Real Property

Real property is classified into either land and rights therein, buildings, or all other. Land accounts for less than 2% of the total cost of DoD real property, while buildings represent almost 60%. Real property is accounted for at acquisition cost, and not revalued after acquisition. The value of DoD real property is, therefore, much greater than the reported \$43 billion. Procedures for the financial accounting of real property are provided in DoDI 7500.2. Financial transactions also require an update of the real property inventory. (See Appendix 2 for a description of the annual report on "Real and Personal Property of the Department of Defense.")

Each Military Department maintains its inventory slightly differently. The Air Force integrates the real property accounting function into its Base Engineer Automated Management System (BEAMS). The Navy has a separate data base for its real property inventory in the Navy Facilities System. The Army is now implementing its Integrated Facilities System (IFS), which will include its real property accounting and inventory.

2. Construction

Budgeting: Each project submitted as part of a construction program is generally identified by a facility category code (DoDI 4165.3), the installation name and location, a facility description, the scope of the project, an estimated cost, and a brief narrative describing the requirement and the construction proposed. The forms to be completed on each project are described in DoDI 7040.4

The two forms required for support of the MilCon Program (DD Forms 1390 and 1391) include requests for new authorization, funding of new authorization, and funding of prior years' authorization. DD Form 1390 is submitted for each installation and lists all projects at that installation. DD Form 1391 is submitted for each project. Candidate projects include: acquisition of land, acquisition or construction of facilities,

and additions, expansions, extensions, conversions, alterations, and replacements of existing facilities (see DoDD 7040.2). In addition to cost estimates, data on each installation are required, including personnel strength, acres owned, and real property values reported in the Inventory of Real Property.

DD Form 1391 also requires detailed data on each project, such as: physical characteristics, description of work, type of design, basis for the requirement, related projects, breakdown of estimated costs, and a narrative defense of the project. This form is required for both new projects and the prior year's unfinanced projects, and is also used for minor construction projects and projects financed by O&M funds (DoDD 4270.24). Additionally, economic analyses must be prepared in support of certain projects as required by DoDI 7041.3.

At the end of each year, when SecDef has approved the MilCon Program, the Construction Annex of the FYDP is updated. The backlog of construction is included in this annex. Backlogs have been growing every year. OSD officials are concerned about the validity of this reported backlog, and its meaning in terms of mission capability and readiness. As the result of audits, OASD(I&L) in November 1975 requested that the Military Departments continue eliminating invalid items from the backlog. A backlog reduction goal of 10% for calendar year 1976 was established.

Financial Accounting: The basic policy governing the financial management of military construction is provided in DoDD 7040.2. This Directive establishes that "budgets should be used at all levels of management as the means for coordinating construction programs with available resources." It requires the implementation of a single account structure to classify costs for planning, programming, budgeting, and accounting. The program-budget accounts should be uniform across the DoD Components as follows:

- Major construction
- Minor construction
- Planning
- Supporting programs
 - Access Roads
 - Minor land acquisition
- NATO infrastructure
- Reimbursable construction work.

DoDI 4270.3 provides additional procedures for recording the progress of projects. Monthly financial reports are prepared by each Military Department and the appropriate operating agencies and operating units. The reports include: (1) changes in funds available at the end of the period, (2) costs incurred during the period, (3) reimbursements earned, (4) total cash receipts and disbursements compared with

amounts budgeted, and (5) fund resources, unpaid obligations and balance available for obligation at the end of the period. Additional information includes supporting data for work-in-process during the current fiscal year: (1) total costs and obligations incurred by separate installation, (2) total costs incurred and measures of physical progress by project, with comparison to targets, and (3) costs incurred compared with amounts budgeted by prescribed account for the planning program. Narrative explanations of deviations or variances from performance targets are also provided.

An annual report includes a reconciliation of changes in the government's investment for cost of construction with changes in the real property inventory. The monthly and annual reports are made available to OSD, and are used to prepare construction performance reports as requested by Congress.

Progress Reporting: ASPR provisions require certain reports. All architect-engineer contracts over \$100,000 for example, are reported quarterly (ASPR 18.400). Work stoppages must also be reported (ASPR 12.101), as must contract delinquency (ASPR 25.203). The report on contracts over \$100,000 can be used to monitor the timeliness with which contracts are awarded. Although this report includes only 30% of all contracts, it represents approximately 70% of the construction funds. Additionally, Congress requires a quarterly report on each construction contract that exceeds authorization by more than 25%.

Non-appropriated Funded Construction Reporting: DoDI 7700.18 established a continuous requirement for reporting construction projects funded with other than appropriated funds. This report was initiated at the request of the House Committee on Appropriations. The report is submitted every six months and consists of three parts.

The first part lists all projects over \$25,000 but less than \$300,000 placed under contract during the preceding six-month period. The second part lists those projects over \$300,000 of which Congress has already been notified after they have been started or placed under contract. The third part of the report lists projects over \$300,000 which are planned or scheduled. The requirements and scope of the projects over \$300,000 are reviewed by the MilCon and Special Programs Division of the Directorate for Facilities Programming before the report is forwarded to Congress. The reports are furnished to both the Armed Services and Appropriations Committees, providing visibility of what is occurring in non-appropriated construction. During FY 1975, approximately \$100 million of such construction was reported as begun.

3. Housing

The programming of family housing is similar in procedure to that of construction. The Military Departments prepare a program, and the Housing Programs

Division reviews it before submission to SecDef and Congress. This program is used to periodically update the Family Housing Annex of the FYDP.

DoDI 4165.44 provides policies and procedures for assignment of Defense family housing. Cost accounts for operations and maintenance are also required (DoDI 7220.16). These cost accounts are organized into 10 housing categories. The elements of cost are civilian labor, material and supplies, equipment usage, utility costs, and services. These accounts support a large number of required family housing reports. A few of these reports are:

- Progress Report on Military Family Housing Projects - as required (DoDI 7720.5)
- Family Housing Alterations, Expansions, and Replacements Approved Pursuant to 10 USC 2674 - semi-annual (DoDI 5100.37)
- Criteria for Improvement, Replacement, Retention, and Disposition of Substandard Family - semi-annual (DoDI 4165.39)
- Determination of Family Housing Requirements - annual (DoDI 4165.45)
- Inventory and Occupancy of Military- Owned and Controlled Family Housing Units - semi-annual (DoDI 4165.44)
- Statement of Facilities and Assignment - annual (DoDI 4165.44)
- Family Housing Category and Summary Report - annual (DoDI 7220.16)
- General or Flag Officers' Quarters Cost Report - annual (DoDI 7220.16)

The DoD components are instructed to maintain a quarterly reporting capability for internal management purposes. Among other things, these reports provide data on requirements, utilization, and operation and maintenance costs. There are also reports on Bachelor Housing Requirements (DoDI 4165.54) and the Administration and Operation of the Homeowner's Assistance Program (DoDI 4165.50).

4. RPMA

Budgeting: As a result of recent OSD action, all periodic RPMA reports are now submitted through Program and Budget channels. Two report formats accompany POM submission. The first requires projections of RPMA requirements and the resulting BMAR for the next seven years. The reporting agency identifies a desired BMAR for the end of each fiscal year, the funding required to achieve this desired BMAR, and the resulting BMAR under current POM-proposed funding. RPMA is also calculated as a percent of BOS. The second format is a condition profile for the top three BMAR categories. Utilities must be included as one of the three. The profile includes information on plant value, cost, age and BMAR trends.

The program requirements are determined from the Regional Complex/Installation Master Plans, which are based on future mission requirements. The Navy combines its review of RPMA requirements with MilCon requirements, which come from the Basic Facilities Requirement List (BFRL). The BFRL is part of the Master Plan of each Navy shore installation. The Army develops its RPMA program requirements from the Unconstrained Requirements Report (URR). The URR is prepared at the installation level and submitted through major command headquarters to the Department of Army. Army RPMA is programmed through its Base Operations Program (Administrative Program 11). This Base Operations Program encompasses 15 functional accounts, four of which correspond to the four RPMA accounts. Because programming and budgeting in the Air Force is centralized at the Air Staff level, individual commands submit reports supporting program requirements.

The other reports are exhibits accompanying budget submissions. These budget exhibits are prepared not only for review of requests by OASD(C) and OASD(I&L), but also for evaluation of program performance over the past year.

Financial Accounting: Cost accounting policy for RPMA is spelled out in DoDI 4165.58. The data system support for cost accounts is different in each of the Military Departments. The Navy has a PWC Management Information System and a PWD Management Information System as subsystems to their Navy Facilities data processing system. The Air Force uses the Base Engineer Automated Management System (BEAMS), currently under revision. According to Air Force officials, BEAMS produces too much data and consequently is not used for its intended managerial purposes. The Army is implementing its Integrated Facilities System, which will accommodate all RPMA accounts and reports as currently required by DoD Directives and Instructions. Unfortunately, the implementation of this system has been held up for a number of years and for a number of reasons, including lack of funds.

The uniqueness of the Army "Facilities Engineer Annual Summary of Operations" report deserves special mention. This report includes data on unit quantities, total expenditures, and unit expenditures for each RPMA account and for most Army installations and each major command. The Army spent many years in developing this report, and it is doubtful that the other Services will make similar attempts. However, it is expected that information of this type will be made available, as new and advanced data systems are implemented. Such information is valuable, not so much because it contributes to the planning process, as because it is an accessible source of data.

Consolidation Reporting: Since 29 March 1971, the Military Departments have been required to report RPMA consolidation actions to ASD(I&L). The reports are

submitted as required by an ASD(I&L) memo of 26 March 1971, and are designed to monitor the progress and success of initiatives to reduce costs via consolidations.

APPENDIX 1

CURRENT LOGISTICS SYSTEM INDICATORS

INTRODUCTION

This Appendix surveys currently available indicators. It is not meant to be comprehensive; rather, it represents an overall view of indicators available in DoD reports and associated information systems.

The list of indicators is organized according to the four functional areas described in this report - supply, maintenance, transportation, and installations and housing. Within each area, the indicators are classified in terms of performance, productivity, and status.

Essentially, an indicator reported in terms of a single unit is classified as status; one reported in terms of a ratio of two status indicators whose units differ is classified as productivity; and one reported as a ratio of two status indicators with the same units is classified as performance. This particular classification is not meant to be final, and is used here only as a structural device. A more meaningful classification of indicators would depend heavily on how the indicators are used and what, if any, standards are developed for making comparisons and indicating discrepancies.

Examination of the following lists indicates that the current reporting of data on indicators is based heavily on status; i.e., the information is rarely expressed in terms of ratios, but is presented in terms of basic quantities - inventories, dollars, manpower. Although status figures are important, figures formed by ratios or percents may indicate more readily where current status is lacking.

The indicators documented here in no way represent our recommendations on indicators for OSD. The inclusion of an indicator does not imply that we feel it is adequate or appropriate. This Appendix is only meant to survey the types of information being reported to OSD and to indicate the manner in which the data are presented.

The description of each indicator includes one or more of its sources, and the organizations within DoD believed to use it. The lists of sources and users are not meant to be complete, but they do represent a reference for the indicator. Many of the data sources listed in this Appendix re-appear in Appendix 2, accompanied by a description of their content and purpose.

SUPPLY INDICATORS

Performance Indicators

Supply Effectiveness (Percent requests for materiel satisfied from system stocks)

Source: MILSTEP (Format 2)

LPMES (Stock Availability)

Selected Management Data Report, prepared by DSA

User: OSD, Military Services, DSA

High Priority Demands (Percent requests for materiel which require special processing to meet time frames)

Source: Defense Management Summary

MILSTEP Highlights

User: OSD, Military Services, DSA

Requisition Submission Time (Percent requisitions submitted on-time by the customer to the ICP).

Source: MILSTEP (Format 1A)

LPMES

User: OSD, Military Services, DSA

ICP Processing Time (Percent requisitions processed on-time by the ICPs to depots for issue of materiel)

Source: MILSTEP (Format 1A)

LPMES

User: OSD, Military Services, DSA

Depot/Storage Site Processing (Percent requisitions for which materiel was issued on time).

Source: MILSTEP (Format 1A)

LPMES

Selected Management Data Report, prepared by DSA

User: OSD, Military Services, DSA

Materiel Denials (Percent requests for materiel denied which was indicated as available on ICP records, but not available at depot)

Source: Inventory Control Effectiveness Indicators, prepared by OASD(C) for OASD(I&L)

Selected Management Data Report, prepared by DSA

User: OSD, Military Services, DSA

NORS Rates

Source: Monthly Summaries of Maintenance and Materiel Management System (3M) - Navy and Marine Corps

Monthly Summaries of the Air Force Maintenance Management System

Monthly Summaries of the Army Maintenance Management System

User: Military Services, OSD

Locator Record Accuracy (Percent agreement between materiel locator records and the actual location in the warehouse)

Source: Inventory Control Effectiveness Indicators, prepared by OASD(C) for OASD(I&L)

Selected Management Data Report, prepared by DSA

User: OSD, DSA, Military Services

Surplus Property Disposals (Percent average inventory)

Source: Working Capital Funds of the DoD, Directorate for Information and Control, OASD(C)

User: OSD

Inventory Turnover Rate

- total
- excluding Mobilization Reserve (M/R)

Source: Working Capital Funds of the DoD, Directorate for Information Operations and Control, OASD(C)

User: OSD, Military Services, DSA

Inventory Adjustment Rate (Value of gross inventory adjustments, expressed as percent average on-hand inventory for the proceeding 12 months)

Source: Inventory Control Effectiveness Indicators, prepared by OASD(C) for OASD(I&L)

User: OSD, Military Services, DSA

Scheduled Inventories Completed (Percent of Total Inventories (line items))

Source: Physical Inventory Program, Inventory Control Effectiveness Indicators, prepared by OASD(C) for OASD(I&L)

User: OSD, Military Services, DSA

DSA Indicators:

- On-Time Fill, Supply Source (percent all issues and immediate issues)
- Materiel Receipt Processing (percent)
- Storage Space Utilization (percent)
- Invoices On-Hand 90 or More Days (percent)
- Discounts Earned (percent)

Source: Selected Management Data Report, prepared by DSA

User: DSA

Item Identification Improvement (percent items identified by the "full descriptive method" and the "reference method;" includes re-identification and transfers from prior "reference" or "partial descriptive" identifications)

Source: LPMES

User: OSD, Military Services, DSA

Productivity Indicators

Materiel Management Operations - by major ICP

- Cost per \$1000 of Sales
- Cost per \$1000 of Inventory
- Cost per Assigned Wholesale National Stock Number (NSN)

Source: Compendium of Inventory Control Point Management Information, Volume I, Management Data, prepared by DSA, Office of the Assistant Director, Plans, Programs and Systems Analysis Division

User: DSA

Number of Requisitions Processed Per Unit Time

Source: Suggested indicator in DoDI 5010.34, Subject: Productivity Enhancement, Measurement, and Evaluation - Operating Guidelines and Reporting Instructions

User: OSD

Number of Line Items Processed Per Unit Time

Source: Suggested indicator in DoDI 5010.34, Subject: Productivity Enhancement, Measurement, and Evaluation - Operating Guidelines and Reporting Instructions

User: OSD

Number of Line Items Inventoried Per Unit Time

Source: Suggested indicator in DoDI 5010.34, Subject: Productivity Enhancement, Measurement, and Evaluation - Operating Guidelines and Reporting Instructions

User: OSD

Status Indicators

Supply System Inventory - Dollar Value (Dollar value of principal and secondary item inventories in the DoD supply system)

Source: Working Capital Funds of the DoD, Directorate of Information and Control, OASD(C)

Defense Management Summary

User: OSD, Military Services, DSA

Federal Catalogue Program (The number of items managed by the Military Services/Agencies)

Source: LPMES (Wholesale Item Range)

User: OSD, Military Services, DSA

Utilization of Long Supply, Excess and Surplus Property (Acquisition value of excess property re-utilized by the Services, and of surplus property sold, scrapped, or donated)

Source: LPMES

User: OSD, Military Services, DSA

Stock Fund (Military Services and DSA)

- Number of days inventory (on-hand and on-order)
- Number of days sales in receivables
- Number of days purchases in payables

Source: Working Capital Funds of the DoD, Directorate for Information, Operations and Control, OASD(C)

User: OSD, Military Departments, DSA

Average Number of Days to Release a Materiel Obligation

Source: MILSTEP (Format 1A)

User: OSD, Military Services, DSA

Demands Processed (Number of requisitions processed during the reporting period)

Source: MILSTEP (Format 2)

LPMES

User: OSD, Military Services, DSA

Back Orders (Number of requests for materiel which are being held pending receipt of new supplies)

Source: MILSTEP (Format 2)

User: OSD, Military Services, DSA

Materiel Obligations Outstanding

Source: LPMES

MILSTEP (Format 2)

Selected Management Data Report, prepared by DSA

User: OSD, DSA, Military Services

DSA Indicators

- **Number of Line Items Shipped and Received**
- **Materiel Obligations on Hand (stocked items)**
- **Gross Requisitions Received (stocked items)**
- **Invoices Completed, Received and On-Hand**
- **Defense Stock Fund: Sales, Obligations, Cash, Balance, Total Inventories**

Source: Selected Management Data Report, prepared by DSA

User: DSA

MAINTENANCE INDICATORS

Performance Indicators

NORM Rates

Source: Monthly Summaries of Maintenance and Material Management System (3M) - Navy and Marine Corps

Monthly Summaries of the Air Force Maintenance Management System

Monthly Summaries of the Army Maintenance Management System

User: OSD, Military Departments

Percent Depot Maintenance Contracted Out (by Service)

Source: Depot Maintenance Reports (Vol. 1)

User: OSD, Military Departments

Percent Maintenance Cost of Inventory Cost (by Service)

Source: Depot Maintenance Reports (Vol. 2)

User: OSD, Military Departments

Direct Manhours as Percent of Total Manhours (Standard - 55%)

Source: Monthly Summaries of 3M System - Navy and Marine Corps

Monthly Summaries of the Air Force Maintenance Management System

Monthly Summaries of the Army Maintenance Management System

User: Military Departments

Industrial Fund:

- Ratio of Revenues to Capital
- Contribution to Total Costs as a Percent for Labor, Material, Contractual Services, and Other Costs

Source: Working Capital Funds of DoD, Directorate for Information, Operations and Control, OASD(C)

User: OSD, Military Departments, DSA

Productivity Indicators

Maintenance Cost per Unit by Item and Facility

Source: Depot Maintenance Reports (Vols. 2 & 3)

User: OSD, Military Departments

Maintenance Manhours per Flying Hour

Source: LPMES

User: OSD, Military Departments

Number of End Items Overhauled per Unit Time

Source: Suggested indicator in DoDI 5010.34 (Productivity Enhancement, Measurement, and Evaluation)

User: OSD

Status Indicators

Maintenance Capital Investment (Maintenance facilities and tooling and equipment by Service)

Source: LPMES

User: OSD, Military Departments

Aircraft Engine Mean Time between Overhauls

Source: LPMES

User: OSD, Military Departments

Maintenance Manpower (Production workforce and engineering workforce by Service)

Source: LPMES

User: OSD, Military Departments

Depot Maintenance Workload Program (Man-years and costs by Service)

Source: LPMES

User: OSD, Military Departments

Depot Maintenance Costs

Source: Depot Maintenance Reports (Vol. 1)

User: OSD, Military Departments

Modification Management (Number of modifications & cost by Service)

Source: LPMES

User: OSD, Military Departments

Depot Maintenance Production Cost and Performance (Number of items maintained and cost by Service)

Source: LPMES

User: OSD, Military Departments

Industrial Fund (Number of days costs in payables)

Source: Working Capital Funds of the DoD, Directorate for Information, Operations and Control, OASD(C)

User: OSD, Military Departments, DSA

TRANSPORTATION INDICATORS

Performance Indicators

Pipeline Performance Analysis Report (Percent line items delivered within a specified elapsed time, by priority group)

- CONUS
- Overseas
- Services, DSA, total DoD

Source: MILSTEP (Format 1b)

User: OSD, Military Services, DSA

Percent Containerization

Source: LPMES
MTMC Progress Report

User: OSD, MTMC

Percent Utilization of Airlift Ton-Mile Capability for Passengers and Cargo (by military, commercial and opportune airlift)

Source: MAC Airlift Data Summary

User: OSD, MAC

Ton-Miles by Service as Percent of Total

Source: MAC Airlift Data Summary

User: OSD, MAC

Percent Revenue Dollars for Passengers and Cargo by Service

Source: MAC Airlift Data Summary

User: OSD, MAC

Intransit Time Analysis Report (Percent shipments delivered which met the UMMIPS time standard-by carrier)

Source: MILSTEP (Format 4)

User: Military Services

Percent Parcel Post Shipments of Total

Source: DSA Management Review

User: DSA

Productivity Indicators

Average Cost per Measurement Ton

Source: MTMC Progress Report

User: OSD, MTMC

Average Cost per Ton-Mile

- CONUS freight traffic
- Personal property shipments

Source: MTMC Progress Report

User: OSD, MTMC

Average Cost per Passenger-Mile - passenger traffic

Source: MTMC Progress Report

User: OSD, MTMC

Average Miles Traveled per Measurement Ton of Cargo by MSC-Controlled Ships and Commercial Ships

Source: MSC Annual Command Report

User: OSD, MSC

Tariff Rates per Passenger-Mile and per Ton-Mile

Source: MAC Airlift Data Summary

User: MAC, OSD

Line Items per Bill of Lading

Source: DSA Management Review

User: DSA

Number of Transportation Requests Processed per Unit Time

Source: Suggested indicator DoDI 5010.34 (Productivity Enhancement, Measurement, and Evaluation)

User: OSD

Status Indicators

Number of Airlift Aircraft by Type

Source: MAC Quarterly Report
Budget Submissions

User: OSD, MAC

Number of Sealift Ships by Type

Source: MSC Financial and Statistical Report
MSC Annual Command Report
Budget Submissions

User: OSD, MSC

Number of Assigned Personnel, Military and Civilian

Source: MAC Quarterly Report
MTMC Progress Report
MSC Financial and Statistical Report
MSC Annual Command Report
Budget Submissions

User: OSD, MAC, MTMC, MSC

DoD Cargo Moved (Total tons by year)

Source: LPMES, DMS

User: OSD

Tons of Cargo Shipped by Commodity

Source: MSC Annual Command Report

User: MSC

Tons of Cargo Shipped by Commercial Carrier

Source: MTMC Progress Report

User: OSD, MTMC

MAC Passenger and Cargo Traffic Movements

Source: MAC Quarterly Report

User: OSD, MAC

Transportation Costs (Total by year)

Source: LPMES
DMS

User: OSD

Industrial Fund: Profit and Loss

Source: MAC Quarterly Reports
MSC Annual Command Report

User: OSD, MAC, MSC

MAC Revenue and Expense Statement

Source: MAC Quarterly Report

User: OSD, MAC

Cargo and Passenger Transshipment Costs through CONUS Water Ports

Source: MTMC Progress Report
Budget Submissions

User: OSD, MTMC

Number of Vehicles Assigned for Administrative Purposes

Source: Agency Report of Motor Vehicle Data

User: OSD, DoD Components

Number of Bills of Lading In and Out

Source: DSA Selected Management Data Report

User: DSA

INSTALLATION AND HOUSING INDICATORS

Performance Indicators

Percent Military Families Accommodated by Family Housing Units

Source: Family Housing Requirements Report

User: OSD, Military Departments

Percent RPMA Contracted Out

Source: Annual Progress Report (submitted by DoD Components)

User: OASD(I&L)

Percent Construction Contracts Exceeding 25% of Estimate

Source: Required Quarterly Report to OSD

User: OASD(I&L), Congress

Percent Construction Contracts Granted Prior to 30 December

Source: All Architect Engineer Contracts over \$100,000 (ASPR 18.400)

User: ODASD(I&H)

Percent Occupancy of Public Quarters (standard 99%)

Source: Inventory & Occupancy of Military-Owned and Controlled Family Housing Units (DoDI 4165.45)

User: OSD, Military Departments

Productivity Indicators

BOS Personnel per person supported

Source: Manpower Requirements Report

User: OASD(M&RA), OASD(C)

BOS Dollars per person supported

Source: FYDP

User: OASD(I&L), OASD(C)

Cost of Operation and Maintenance of Family Housing per Unit

Source: Annual Budget for Family Housing

User: OSD

Status Indicators

Total Value of Real Property (acquisition cost)

Source: Real and Personal Property of the DoD

User: OSD, Military Departments

Total Acres DoD-owned (and/or leased)

Source: Real and Personal Property of DoD

User: OSD, Military Departments, JCS

Number of Installations (total and principal)

- Service
- CONUS
- Overseas

Source: Inventory of Real Property

User: OSD, Military Departments, JCS

Backlog of Construction by Facility Category

Source: Construction Annex of the FYDP, Master Plans of the Services

User: OSD, Military Departments, Commands, Installations

Construction Funds Expended in Each Facility Category (including pollution abatement and energy conservation programs)

Source: MilCon Program

User: OSD, Military Departments, Commands

Backlog of Maintenance and Repair of Real Property

Source: POM Submissions, Budget Exhibits, Annual Progress Reports
(submitted by DoD Components)

User: OASD(I&L), OASD(C), DoD Components

Number of Family Housing Units

Source: Inventory and Occupancy of Military-Owned and Controlled Family Housing Units

User: OSD, Military Departments

Number of Base Closures and Acquisitions

Source: Acquisition and Disposal of Real Property (DoDI 4165.12)

User: OSD

APPENDIX 2

DESCRIPTIONS OF SELECTED DATA SOURCES

This Appendix describes selected data sources that provide many currently used logistics system indicators. The data sources were selected on the basis of: (1) pertinence to at least one of the four functional areas--supply, maintenance, transportation, or installations and housing, and (2) preparation by either OSD, or the Military Services and Defense Agencies as required by OSD. The only exception is the DSA Selected Management Data Report, which is not prepared or required by OSD. This report is of particular interest because it is part of the DSA management indicator system, which can serve as a prototype to other systems.

The data sources selected for this Appendix were chosen for their apparent contribution to the development of logistics indicators. They represent a very small portion of available reports. These sources are representative because they illustrate the aggregation, analysis, and frequency of the information provided to OSD.

The intent of this Appendix, then, is to examine some data sources readily accessible to DoD, in order to see why, how and when the data are being provided. This procedure provides a basic understanding of what types of data, reports, and indicators exist, and also indicates where more detailed information can be obtained.

Each data source is described in a particular format. The descriptions contain the purpose and objectives of the reported information, the background or development of the data source, the organizational content, the procedure for data collection, and the availability of historical data. The latter is a step towards obtaining data for trend analysis. Understanding how the systems are maintained and how the information is acquired may identify reporting anomalies. Each of the topics identified above is important in obtaining the requisite data to support a management indicator system.

None of the following descriptions is meant to be an evaluation of the data sources, and no detailed analyses of any of them have been made. This Appendix addresses the broad understanding of DoD reports required to develop a comprehensive understanding of indicators.

FYDP

The FYDP is the official program summarizing SecDef-approved plans and programs for DoD. Published at least once annually, it implements decisions made during the DoD PPBS cycle. The FYDP includes force, manpower, and cost data, covering prior, current, and succeeding fiscal years. Manpower and cost data are reported for five succeeding years, while force structure data are reported for eight succeeding years. The PPBS is described in DoDI 7045.7, and procedures for updating program data in the FYDP are contained in DoDI 7048.8. The FYDP is classified SECRET.

Background

The planning cycle of the PPBS begins with the issuance (usually in May of each year) of the Joint Strategic Objectives Plan (JSOP), Volume I (Military Strategy and Force Planning Guidance), prepared by the JCS. The JSOP translates the national objectives and policies of the United States into military objectives and strategies. It includes force planning guidance necessary to accomplish these objectives, and an evaluation of the risks associated with them. The SecDef reviews Volume I of the JSOP and indicates any modifications or additional guidance through the Defense Policy and Planning Guidance (DPPG). Based upon the JSOP, Volume I, and the DPPG, the JCS issues Volume II of the JSOP, Analyses and Force Tabulations. This document indicates force levels required to carry out the military strategy as prescribed in JSOP I and the DPPG, assessing risk and analyzing manpower and cost implications. JSOP II is published annually and is usually issued in December.

The planning cycle is completed when the SecDef issues the Planning and Programming Guidance Memorandum (PPGM), prescribing guidance for force, material and fiscal planning. The PPGM indicates dollar constraints within which programs are to be developed, and projects a five-year allocation of funds by major mission and support categories for each of the Military Departments. Considering the fiscal guidance stated in the DPPG, the JCS submit the Joint Forces Memorandum (JFM), providing force levels and support programs consistent with the fiscal constraints. If funds are not sufficient to support all of the force structure recommendations, risks associated with reducing the forces to meet fiscal guidance are included. The JFM also highlights major force issues to be resolved in the coming year.

Within the programming cycle, each Military Service and Defense Agency is required to submit a POM to the SecDef. The POM gives a detailed presentation of forces and manpower within fiscal constraints, structured by major mission and support categories

for the entire budget year. The SecDef reviews the POMs and the JFM, and issues decisions on force and program changes through the PDM. The JCS, Military Departments, and the Defense Agencies can submit comments to the SecDef through reclamas. Amended PDMs are issued when new decisions are made to the reclamas. Once the intra-DoD decision-making process is complete, the approved forces, manpower and cost data are implemented into the FYDP. The organization and contents of the FYDP are described below.

The PPBS concludes with the budgeting cycle, which begins with budget estimates, based on the final levels of force and manpower agreed upon in the programming cycle, submitted by the Military Departments and Defense Agencies. These estimates are reviewed and analyzed, and PBDs that authorize changes to these budget estimates are published by the SecDef. Working jointly with DoD, and representing the President, is OMB. When DoD, OMB, and the Military Services and Defense Agencies agree upon a budget, it is submitted (usually in January) to Congress for approval as part of the President's Budget. The results of these budget estimates and the PBDs are inserted into the FYDP.

Organization

The FYDP is organized by ten major force programs, subdivided into over 1100 program elements. The program element is the basic building block of the FYDP. It identifies the resources, i.e., the forces, manpower, materiel quantities, and costs needed to perform an activity within the major force program. The ten major programs of the FYDP are:

Program 1 - Strategic Forces

This program includes all aircraft, land and sea-based missile forces, and command control systems used for strategic retaliation. Civil defense activities are also included.

Program 2 - General Purpose Forces

This program consists of forces used to fight local or limited wars, or for theater engagement in general war. It includes command organizations associated with these forces. The program elements within this program are identified by type of unit and major command.

Program 3 - Intelligence and Communications

This program includes resources related primarily to centrally-directed DoD objectives for intelligence and security, communications and other functions, such as weather service, oceanography, mapping and charting.

Program 4 - Airlift/Sealift

This program consists of airlift and sealift forces, such as MAC and MSC, and related support units.

Program 5 - Guard and Reserve Forces

This program includes all Reserve and National Guard Forces, including the on-site air defense units. The elements in this program are arranged similarly to the major program breakout of regular forces, to facilitate relating the Guard and Reserve forces to the active force structure.

Program 6 - Research and Development

The program consists of all R&D activities not related to items approved for procurement and deployment. Research and development in this program are broken up into five categories: Research, Exploratory Development, Advanced Development, Engineering Development, and Management and Support.

Program 7 - Central Supply and Maintenance

This program consists of supply and maintenance not organic to other program elements. It includes non-deployable supply depots and maintenance depots, both industrially-funded and non-industrially-funded.

Program 8 - Training, Medical, and Other General Personnel Activities

This program consists of training, medical, and other support activities associated with personnel, but excludes training specifically related to, and identified with, another program element. It also excludes housing, subsistence, medical, recreational and similar costs that are included in other program elements, such as base operations.

Program 9 - Administration and Associated Activities

This program includes administrative support of departmental and major administrative headquarters, field commands, and administrative activities not included in other programs, construction support activities and miscellaneous activities.

Program 10 - Support of Other Nations

This program consists of elements identified with the Military Assistance Program (MAP) and Agency for International Development (AID) Program, and related support activities. It also includes the resources for the procurement of war reserve stocks for Allies.

Data within each program are organized by program elements. Program elements are groupings of forces, manpower, and costs associated with a particular mission or organization. Each program element consists of a subset of these resources. Since dollars are used to identify all resources, costs are always included in each program element. A six-digit code is used to identify program elements. The first digit indicates the major

program, and the last digit is an alphabetic character indicating the Military Service or Defense Agency to which the data apply. For all programs except Program 6, the second, third, fourth and fifth digits represent a specific serial number to identify the element. For Program 6, the second digit identifies a specific R&D category, i.e., Research, Exploratory, Advanced, or Engineering Development and Management Support. The third digit represents one of eight budget activity codes, and the fourth and fifth digits represent the serial number of a specific element. A detailed explanation of these codes can be found in Handbook 7045.7H (Department of Defense Five Year Defense Program Structure, Codes, and Definitions).

Resource identification codes identify specific resources assigned to each program element. Each Military Service and Defense Agency has been assigned these codes for reporting specific data in order to update the FYDP. Resource identification codes are used for data retrieval, and thus allow greater accuracy in updating and validating the approved program.

Each Military Service and Defense Agency maintains a FYDP data file. These data files are updated by program element when the force, manpower and cost data are approved. DoD Components submit FYDP data directly to the DASD(C) on punched cards or magnetic tape. A memorandum accompanies the data, stating its "as of" date, its security classification, and other comments. Detailed procedures for submission of changes to FYDP data are contained in DoDI 7045.8

Historical Data

Each year an issue of the FYDP is published reflecting historical data for the previous 14 years. The FYDP: Historical Summary and Program Element Detail is provided by OASD(C), and is published following each POM/FYDP update. It is organized by the ten major programs of the FYDP; each program is displayed in two sections, each section reporting data for seven years. The historical FYDP also contains summarized information divided into four parts: Summary Tables-FY 1962 through FY 1975; Forces; Program Matrix Tables; and Forces, TOA, and Manpower (in program element detail). The classification of the historical FYDP is SECRET.

Defense Management Summary (DMS)

The DMS is the official source for summary management information in DoD. It is classified SECRET and has a controlled distribution list. The data are organized in tables and updated at various intervals. To ensure consistent and accurate data for DoD management, the statistical information in the DMS is validated and coordinated with DoD programs and objectives. The DMS is prepared by the Directorate for Information Operations and Control, OASD(C). DoDI 5000.25, dated December 11, 1974, contains a description of the DMS.

Background

Secretary of Defense Robert McNamara realized that many inconsistencies existed in the data that top management in DoD was receiving. DoD management needed a document that would be periodically updated, and would summarize data in consistent terms, for the purpose of answering questions that arose at that level. The DMS was therefore initiated in 1967. It originally contained 45 summary tables and more detail was added as specific questions arose.

Objectives

The DMS is directed to DoD managers to assist them in managing DoD programs and in evaluating the accomplishment of DoD goals. The objectives of the DMS are to:

- (1) Indicate the status of DoD objectives by quantitative measures where possible and by narrative means when performance cannot be quantified
- (2) Provide a flow of information and data between the levels of management
- (3) Provide a source of data for use by all DoD Components
- (4) Provide uniform terminology and information compatible with that prepared for the White House, Congress, non-Defense Agencies, and the press
- (5) Provide for validation of the data.

Organization

The DMS is organized by a series of tables separated into the following topics: force structure; weapon inventories; force deployment status (readiness); manpower; logistics; research, development, test and evaluation; budget; economics; strategic weapons; health and environment; telecommunications; and the U. S. European Command. There is also a section that summarizes topics such as manpower, real property inventory, and military forces. These tables are updated at various intervals monthly, quarterly, semi-annually, annually, or whenever the FYDP is updated. The tables often contain the source of the information, and each table is stamped with the date of the last update.

The logistics section contains data on stock funds, industrial funds, military installations, supply system inventories, and family housing. A table on "Key Logistics Indices and Trends" is also included.

Historical Data

Each of the tables within the DMS reports data for varying time periods. Some are projective, but most are current or historical. Examples of historical information within the logistics area are:

Family Housing-Inventory and Construction	FY 1965 - FY 1979
Storage and Warehousing Inventory, by Area and Cost	FY 1968 - present
Maintenance, Depot and Overhaul Cost	FY 1968 - FY 1975
Real Property Inventory	June 1972 - present
Stock-Funded Inventories	FY 1961 - FY 197T
Transportation, Costs	FY 1968 - FY 1975
Installations, Inventory	FY 1967 - FY 1974
Industrial Fund Inventories, by Department, by Type	FY 1954 - present

LPMES

The Logistics Performance Measurement and Evaluation System (LPMES) provides a method of identifying and evaluating logistics areas for top DoD management. It is designed to reflect current status and trends within functional areas, using statistical data, trend charts and analyses. LPMES is a quarterly report and is unclassified. Currently, it is not being published while its content is under review. It was previously prepared by the Directorate for Logistics Management Systems, OASD(I&L). LPMES is described in DoDD 5010.24 and DoDI 5010.25.

Background

LPMES was initiated in 1969, when top logistics managers desired summary data to indicate potential problem areas. In 1971, the emphasis of LPMES was changed from specific problems to all major logistics programs and functions. LPMES was thus intended to be used for evaluating DoD performance and progress in executing logistics policies and achieving objectives.

The use of this data for management purposes requires it to be sufficiently condensed for a concise, but thorough, representation of performance. The document should also be flexible, so that deletions and additions can be handled as management needs change; and timely, so that management can act when performance is not commensurate with standards. LPMES was originally intended to be timely, but the recent processing time has been from three to six months. Because of this delay, and questions about its content and presentation, LPMES is not being prepared while these issues are being discussed.

Objectives

LPMES is directed to DoD logistics managers to assist them in evaluating and measuring performance, in appraising objectives, and in focusing on developing problems in time to deal with them effectively. The policies of LPMES are to:

- (1) Prepare summary data of major areas for top logistics managers and have detailed data available for answering specific questions
- (2) Describe the major area of logistics by providing an overview of its status
- (3) Provide a flexible means of incorporating changes when management needs require different data
- (4) Serve as the only authorized reporting mechanism for new data requirements
- (5) Remove data which have become obsolete or no longer serve their original purpose
- (6) Allow for input from OASD(I&L), the Military Services, and DSA, when approved.

Data Collection

The Military Departments and DSA are required by DoDD 5010.24 and DoDI 5010.25 to submit data for LPMES. Whenever possible, these data elements should be obtained from existing DoD Component data collection systems. As soon as the data are available, they are to be provided to OASD(I&L) in the formats specified by DoDI 5010.25. No deadlines are required, and the amount of detail called for is limited, in order to reduce the burden of reporting. DoD Components, however, must furnish detailed information whenever it is needed to answer specific questions.

Organization

LPMES is organized by individual functional areas. For each area, there is a statement of objectives, scope, goals, and accomplishments. Included in each functional area is a chart or graph, and a list of performance indicators for each Military Service, DSA, and/or all of DoD. Each graph indicates not only present status, but also the desired goal.

The functional areas covered by LPMES and their objectives, are described in the enclosure to DoDI 5010.25:

- **Materiel Obligations Outstanding**

To measure progress in reducing the number of materiel obligations outstanding for stocked items

- **Minimize Wholesale Item Range**

To provide for standardization and reduction of items essential to support military operations

- **On-time Pipeline Performance**

To summarize the current status of on-time pipeline performance for order and shipment of materiel

- **Utilization of Long Supply, Excess and Surplus Property**

To ensure maximum utilization of available long supply, excess and surplus assets in satisfying Defense requirements

- **Stock Availability**

To measure supply system performance in terms of the percentage of demands from stocked items which are available when requested

- **Letter Contracts**

To minimize letter contracts

- **Undefinitized Change Orders**

To achieve timely pricing and definitization of contract change orders in order to maintain the integrity of original contract structures and to minimize government risk

- Competition

To ensure that Defense procurements are placed on a competitive basis to the extent possible

- Small Business

To provide a fair proportion of total DoD purchases and contracts for supplies, research and development, and services with small businesses

- Progress Payments Based on Costs

To measure the amounts of cost-based progress payments outstanding, made and liquidated during specified periods of time

- Containerization

To ensure the maximum use of containers in overseas shipment of ocean cargo to the extent that it is cost-favorable

- Maintenance Manhours per Flying Hour

To maintain visibility of the maintenance manhours per flying hour expended on selected aircraft at operational, intermediate and depot levels, and to reduce the maintenance manhour rate where feasible

- Aircraft Engine Mean Time Between Overhaul

To attain the maximum time between overhauls commensurate with mission requirements and safety, and to quantify the improvements that result in increased engine life, generally reflected by an increase in average hours between overhaul

- Modification Management

To improve management effectiveness in the execution of modification programs

- Depot Maintenance Production Cost and Performance

To achieve improved cost control and increase overall effectiveness in the production of selected weapons or equipment end item systems at depot maintenance facilities

- Maintenance Manpower

To improve the distribution, utilization and productivity of the overall maintenance work force, to achieve increased efficiency and effectiveness in maintenance of Defense materiel

- Depot Maintenance Workload Program

To improve management effectiveness in execution of annual depot maintenance work programs

- Class I Value Engineering Change Proposals (VECPs) Received

To increase the number of VECs submitted by contractors, with consequent increased savings to DoD

- Delays in Ship Deliveries

To reduce to a minimum the delays in deliveries of ships under construction or under conversion.

Each of these topics is discussed in DoDI 5010.25, and included in that instruction are the formats and specifications for providing the data to OASD(I&L). Whenever data do not fall within a predetermined tolerance range, called the "zone of acceptable performance," a statement indicating why the data are outside the range, and what corrective actions are being taken, must accompany the data submission.

Historical Data

Historical data are contained in LPMES in two forms: in certain graphs for trend analyses and in the reporting of performance indicators. Performance indicators are given for each quarter of the year being reported, and for two previous fiscal years. LPMES also contains a table called "Key Logistics Indices and Trends," where the data for the FY 1975 issue date from FY 1968.

MILSTEP

MILSTEP provides a standard method for measuring supply system performance and transportation effectiveness throughout DoD. Performances of the supply and transportation systems are measured by using the issue and shipping documents of the Military Standard Requisitioning and Issue Procedures (MILSTRIP) and MILSTAMP. These performance measures are in terms of on-time shipments, on-time deliveries, stock availability, volume, age of backorders, and other measurement indices.

The MILSTEP data system was designed and developed by a joint Service/Agency task group and its reports are for use at the ICP level, the headquarters level of the Military Services, and the OSD level. The Director of DSA has been designated as the System Administrator by authority of DoDD 4000.25. The details of the system are contained in the MILSTEP Manual, DoD 4000.23M. The MILSTEP reports are unclassified.

Background

These standard data systems and procedures originated to improve the flow of logistics data among the various Services and Agencies within DoD. The "Single Manager Concept," whereby one Service provides support to all the Services for a specific item of supply, began in 1955. This concept improved the management of materiel by reducing supply inventories and operating costs, and forced the Services to begin to communicate with each other regarding requirements, demands, stockage levels and other logistics information. The large volume of data which resulted necessitated the use of computers, and thus required a common language, common formats, and common codes for all of DoD.

In 1961, DSA was established as an integrated manager of common support items for all the Military Services. This provided an additional need for common communication of supply data among the Services and Agencies. As a result, in July 1962, MILSTRIP was implemented. MILSTAMP followed in May 1963 for transportation and movement, and MILSTEP in 1968 for supply and transportation evaluation. UMMIPS, which provides time standards and a priority mechanism for requisitions, resulted as a corollary to MILSTRIP.

Objectives

MILSTEP is essentially a "parasite" system, using documents from MILSTRIP and MILSTAMP and evaluating performance against UMMIPS time standards. Each of these systems was instituted to provide uniform methods, procedures and documentation throughout DoD.

MILSTRIP is the conceptual base of all Military Standard Logistics Systems. It prescribes uniform procedures, codes, formats, documents and time standards for the

interchange of logistics information relating to requisitioning, supply advice, supply status, materiel issue, materiel receipt and materiel returns. MILSTRIP procedures, forms and formats are mandatory for all Military Services and Agencies. MILSTRIP procedures are described in detail in DoD manual, DoD 4140.17M.

MILSTAMP provides a standard system of documentation within the Defense Transportation System in order to coordinate, control, and evaluate movement of materiel within the system. MILSTAMP procedures are published in DoD Regulation 4500.32R.

UMMIPS ranks competing demands for logistics system resources, such as transportation, warehousing, paperwork processing, and materiel inventories in terms of relative importance. UMMIPS establishes uniform time standards for requisition processing and materiel movement, provides a basis for managing the movement of materiel, and ensures that materiel requirements are processed according to the mission of the requiring activity and the urgency of need for the materiel.

A two-digit numeric code is used to rank the relative importance of requisitions and materiel movement transactions. The code ranges from 01 to 15 and is called a PD. These numbers are determined from a matrix of FADs and UNDs. FADs are Roman numerals I, II, III, IV, V, and are applied to units, functions, missions, etc.; they are assigned by the SecDef, the JCS, or by authorized DoD Components. The UNDs, identified by the letters A, B, and C, are assigned by the requisitioner, and reflect the importance of the requested item. The PDs for FADS I - V and for UNDs A, B, and C are shown in the matrix below. Time frames are established by the value of the PD, and assume availability of the resources within the Defense supply system.

FAD	UND		
	A	B	C
I	01	04	11
II	02	05	12
III	03	06	13
IV	07	09	14
V	08	10	15

PRIORITY DESIGNATORS

MILSTEP, using these systems, is designed to produce uniform Defense-wide logistics performance measurement reports to achieve the following objectives:

- Measurement of supply and transportation performance against the time standards of UMMIPS
- Validation or revision of the UMMIPS time standards
- Evaluation of performance of each segment of the transportation pipeline by point-to-point and carrier performance

- Determination of supply systems workload and materiel availability
- Provision of uniform reports for analysis by all levels of management.

Data Collection

Transportation performance is measured by the Intransit Data Card (IDC). This computer card is specified by the MILSTAMP system, and accompanies shipments from the storage depot to the consignee. The IDC is prepunched at the shipping activity with information about the shipment, and is preaddressed on the reverse side to the DoD Central Data Collection Point (CDCP). The consignee, upon receipt of the shipment, keypunches, stamps, or writes the date on the card. The information is mailed or transmitted over the digital communications network (AUTODIN) to the CDCP.

The CDCP collects, validates and distributes the information to all the Services and DSA. The validation criteria that the CDCP uses are described in Appendix E of the MILSTEP manual. The CDCP distributes edited information by tape to the Service and Agency Central Processing Points (CPPs), which process the information on a monthly basis for Service and DSA reports. Besides the IDC tapes which the CPP receives from the CDCP, a MILSTRIP history tape is obtained from the ICP for use in the preparation of the Service and Agency reports. The CPPs are also responsible for preparing the processed data in summary form for the ASD(C), who produces quarterly MILSTEP reports.

The Director for Information Operations, OASD(C), prepares MILSTEP ledgers and highlights for ASD(I&L) and other interested elements of OSD. The ledgers are produced in six volumes - one for each of the Services, DSA, and DoD. Each volume is organized by type of report. The MILSTEP highlights are summarizations of the ledgers.

Organization

The following is a description of the MILSTEP reports:

- (1) The Pipeline Performance Analysis Report (Format 1A) This report measures performance against UMMIPS time standards for requisition submission and supply source processing. For each time segment of the supply processing cycle, the percentage of the number of line items processed for shipment is reported in terms of priority groups and elapsed processing time.
- (2) The Pipeline Performance Analysis Report (Format 1B) This report measures the transportation time and total order shipping time against the UMMIPS time standards. There are two sections to this report-CONUS and Overseas. Both reports reflect the percentage of the number of line items delivered for each segment of the logistics cycle by priority groups and elapsed time to process and deliver.

- (3) The Supply Availability and Workload Analysis Report (Format 2) This report measures supply fill rate and provides workload statistics. Workloads for stocked and non-stocked items are reported separately. Examples of reported items are: number of delayed supply actions by priority and age group, number of supply demands received, and percent of stock availability.
- (4) The Response Rate Analysis Report (Format 3) This report evaluates the timeliness and responsiveness of the consignees in returning IDCs after shipments have been delivered.
- (5) The Intransit Time Analysis Report (Format 4) This report indicates the number of shipments, by elapsed time, that were delivered by a particular carrier under a selected mode of shipment. It is intended to be used by transportation officers to evaluate carrier performance and modes of shipment for planning purposes.

Historical Data

The Directorate for Information Operations and Control, OASD(C) also provides historical data in the form of MILSTEP highlights. Format 1A and Format 2 are currently available from FY 1969 to the present. Format 1B (Pipeline Performance Analysis), expected in the fall of 1976, will provide future historical data.

DSA

Selected Management Data Report

The Selected Management Data Report provides a statistical and graphical display of data to be used in evaluating performance and observing variations from desired objectives. The report is unclassified and produced monthly. DSA produces this report as part of its management review process. It is provided as a tool for DSA management and is not an OSD report. The report and the system of which it is a part are mentioned here because the report provides a source of both indicators and data, and the system is a prototype for a management indicator system.

Background

The DSA management indicator system evolved from management's desire for a systematic and periodic method of data presentation. The system, which began in the early- to mid-1960's, is composed of three management information techniques - a data report, a monthly meeting, and a concise, portable summarization of data. Each of these techniques is used monthly.

The Selected Management Data Report contains data compiled principally from the monthly Management Data Report. The procedure that was used in preparing a system for the production of this report began with the submission of data element requirements by the executive managers. These data requirements were consolidated into a list, and were analyzed, reduced and augmented. Once the final data requirements were decided, a computer edit program processed the data and stored the data elements on file. The computer then generated the reports, which summarized the data in the appropriate form and plotted the charts and graphs.

The original reports also included a narrative analysis of the data. Such narratives increase the time needed to prepare the report, thus reducing the timeliness of the data, and therefore are no longer included. The present process for preparing the Selected Management Data Report introduces a one-month time lag in the data. The following section discusses the organization of the report.

Another technique used by DSA is the Director's Monthly Management Review. The meeting serves as a means of presenting the data in the DSA Selected Management Data Report. The data is reorganized and presented by viewgraphs to the director and program managers who meet in open forum at the review. This viewgraph presentation and discussion supersede the previous narrative analysis contained in the Selected Data Management Report. To maintain interest, the approach and format of the data

presentations change frequently. Tables, trend charts, graphs and ratios are used in displaying data. Selection of the data to be presented is influenced by topics currently of interest to other agencies.

Before each meeting, the data to be presented are reviewed and coordinated with the program managers, who are responsible for causes and effects in the data. The director, while being briefed at these meetings, indicates any changes or actions he desires. These statements are followed by a memo in which he indicates dates for required completion or reporting of the status of the actions taken in response to his comments.

Along with the data report and the monthly meetings, DSA provides its managers with a "Wallet Wonder." The Wallet Wonder is a pocket folder of statistical data summarizing DSA's current status. It is produced to supply management with readily available recent data for replying to questions and for policy and decision-making.

Organization

The Selected Management Data Report consists of graphs, which display the current year's performance with that of the previous year and tables, which report data on a monthly basis by DSA center, depot, or service, as appropriate. Some of these tables contain goals, which are developed by the program managers and which represent a standard for achievement. In addition to this graphical and tabular presentation, the report includes a "Key Indicator Summary." This summary presents, for each chart, the important data by monthly average, year-to-date and total for the previous fiscal year, and by current month, year-to-date and current program estimate for the present fiscal year. These data elements are selected for their sensitivity in detecting potential problem areas which may require management attention.

Besides these two presentations of data, the report includes highlights, which are inserted only for internal use. The highlights relate current performance to past performance, but do not give explanations for any changes which may appear in the data.

Data Collection

DSA's own management information system supplies the data needed to prepare its reports. Reporting requirements for its Management Information System are contained in the DSA Management Information Glossary, which includes strict data element definitions.

Data generated in the field can be reported either mechanically or manually. Much of the data being reported is mechanized, and fed directly into the data base from the field. The data that are prepared manually are usually on cards or tape and transmitted

by AUTODIN or mail. Some data do enter the system through hard copy reports from which DSA's data processing center extracts pertinent information and enters it directly into the data base. Changes to data already in the system cannot be entered directly, but must enter through the DSA data processing center, so that the changes can be verified. These changes are generally received by mail.

Data items are transmitted either monthly, quarterly or semi-annually. Update frequencies and due dates are indicated in the Management Information System Glossary.

Historical Data

Data appearing in the selected Management Data Report are periodically summarized and stored for later use in trend analysis or in tracing a particular item. Some data can be traced back to 1962, when DSA became operational. Normal data are generally kept for about five years, and sensitive data can be obtained for ten.

Depot Maintenance Reports

The Depot Maintenance Reports are intended to provide a standardized method of accounting for, and reporting costs of, depot maintenance and maintenance support. These reports presently consist of three volumes, published annually by the Directorate for Information Operations and Control, OASD(C). Each report is unclassified, and each volume is reported separately by Military Department. Although each Military Service is responsible for reporting depot maintenance and maintenance support activities, the Navy and Marine Corps have not as yet submitted reports. The Depot Maintenance Reports published thus far were based on the reporting requirements stated in DoDI 7220.29. This Instruction has been revised as of October 1975, and authorizes DoD Handbook 7220.29H, which gives a detailed description of the definitions, requirements and formats for depot maintenance reporting. The first publication of the Depot Maintenance Reports based on the new reporting instructions was expected in October of 1976.

Background

The need for cost and production data for depot maintenance was demonstrated by the issuance of DoDI 7220.14, "Uniform Cost Accounting for Depot Maintenance" (August 1963), and DoDI 7720.9, "Depot Maintenance Production Report" (December 1963). DoDI 7220.29, "Uniform Depot Maintenance Cost Accounting and Production Reporting System" (October 1968), superseded these Instructions. DoDI 7220.29 was intended to provide for collection, recording, and reporting of depot maintenance information. This uniform system of data classification was expected to furnish a means to measure productivity, indicate maintenance capability, develop performance and cost standards, and respond to data requests. Each DoD Component was required to submit an annual report by item, facility, and customer, of depot maintenance work completed that year. The Instruction included specifications for reporting requirements, i.e., a description of the data records and an explanation of the required data entries.

In 1971, the General Accounting Office (GAO) withheld approval of the accounting principles and standards contained in DoDI 7220.29. Its report to Congress, "Potential for Improvement in DoD Maintenance Activities Through Better Cost Accounting Systems," identified the systems each DoD Component was using, and indicated disparities within them. DoDI 7220.29 was revised in 1975, and issuance of the Depot Maintenance Cost Accounting Handbook was authorized. The purpose of the Handbook was to provide a set of principles, standards, policies, definitions and requirements for uniform cost accounting and reporting by all DoD depot maintenance activities.

Objectives

The principal objective introduced by DoDI 7220.29 for the Depot Maintenance Reports is to establish a uniform cost accounting system to identify depot maintenance costs as they relate to weapons systems and items maintained. These costs also include depot maintenance and maintenance support costs incurred by contractors. Data produced by this system will be used to measure productivity, develop performance and cost standards, indicate areas for management attention, identify maintenance capability, and denote areas of identical capacity.

Cost and production data from this system will also give management the information needed to answer questions from Congress and the general public more efficiently. As stated in DoD Handbook 7220.29H, management will have the necessary facts to:

- Develop the depot maintenance and maintenance work programs
- Measure actual utilization of resources against planned programs
- Provide managerial direction and guidance
- Develop standard unit costs of depot maintenance work
- Compare unit cost incurred to the standard unit cost of work completed
- Compare unit cost incurred with the alternate of replacement cost
- Compare cost among organic depots or between organic and contract sources
- Evaluate depot maintenance and maintenance support activities for efficient use of resources, and identify marginally efficient maintenance activities
- Assist in control of cost over/under-runs.

Data Collection

Each DoD Component is instructed by DoD Handbook 7220.29H to maintain the required data on magnetic tape. This tape must be updated quarterly, on a cumulative basis, and submitted to the Directorate of Information Operations and Control, OASD(C) within 90 days of the end of the fiscal year. Before submission of the tape to OSD, validity checks must be performed to insure proper formatting of the data. DoD Components are also required to keep the final fiscal year tape indefinitely to be used to analyze trends in weapon system maintenance costs.

Organization

Since the Depot Maintenance Reports required by revised DoDI 7220.29 have not been published as of this writing, the following description pertains to the most recent Depot Maintenance Reports. The Directorate of Information Operations and Control,

OASD(C) prepares three volumes for each DoD Component submitting the required data. Each volume is produced by computer.

Volume I, Depot Maintenance Management Summaries, contains depot maintenance costs broken out by: major commodity group, organic facilities, work performance category, and contractors. Depot maintenance costs by major commodity group are reported both inclusive and exclusive of support costs. The major commodity groups considered are: aircraft, automotive equipment, combat vehicles, construction equipment, electronics-communications, missiles, ships, armaments, rail equipment, general equipment, and all other items. Organic facilities are reported for inside and outside CONUS. The work performance codes considered range alphabetically from A to T (excluding O), and represent respectively: overhaul, progressive maintenance, conversion, activation, inactivation, renovation, analytical work, modification, repair, inspection and test, manufacture, reclamation, technical assistance, programming and planning support, technical and engineering data, technical and administrative training, and tools and equipment other than real property. Distribution in dollar breakouts is reported. Also included in Volume I are: depot maintenance costs by contractors, inside and outside CONUS; weapon systems with depot maintenance cost of \$5 million or more, excluding support costs; and depot maintenance costs by program element as required in the FYDP.

Volume 2 summarizes by facility those items for which maintenance costs exceeded 65% of the unit standard inventory price. The work code, quantity of components, standard inventory price, maintenance cost per unit, and percent maintenance cost of inventory cost are reported for each item type in this category.

Volume 3 summarizes the items on which the same type of work was completed in two or more government or contractor facilities. The report gives the work code, item, facility, quantity, total government costs, total contractor costs, and the maintenance cost per unit.

Historical Data

As previously mentioned, DoD Handbook 7220.29H requires each DoD Component to keep on tape for an indefinite period a summarization of the final fiscal year data. This procedure will provide the necessary data for observing weapon system maintenance cost trends. Presently, the data as reported by the three volumes of the Depot Maintenance Reports may be obtained from FY 1974 to the present from the Directorate for Information Operations and Control, OASD(C). Since the Navy and Marine Corps have not as yet submitted the depot maintenance cost data, only Army and Air Force Depot Maintenance Reports are available.

Reports on MAC, MSC, MTMC

The progress reports of MAC, MSC and MTMC indicate to OSD the status and performance of each operation. The reports are required quarterly and are unclassified. They are used to relate actual performance to the programmed operations set forth in the annual Operating Budget. The requirement for the submission of these reports and the formats for the data are contained in DoDI 4100.31 (MSC, MTMC) and DoDD 5160.2 (MAC).

Background

The single manager concept originated in 1955 to improve management by having one Service support all the Services in a specific logistics area. DoDI 4100.31, "Reports on Single Manager Operations" (September 1960), originally required reports of each single manager in its respective area of responsibility, and indicated the purposes, content, and format of such reports. DoDD 5160.2, "Single Manager Assignment for Airlift Service" (October 1973), required MAC to submit a quarterly report to OASD(C) and OASD(I&L), and introduced specific duties and new reporting requirements for the single manager for airlift services.

Objective

The objective of the single manager reports is to provide OSD with the information necessary to formulate effective management policies and decisions. The reports also serve as a source for comparing present performance to past performance. DoDI 4100.31 requires each single manager to submit statistical data for the present quarter and cumulatively for the fiscal year, and corresponding data for the previous fiscal year, in order that comparisons and trends may be obtained. This Directive also requires narrative reports of management analysis and significant accomplishments for the previous year, as required. Management analysis includes a discussion of any significant changes with supporting data. Significant accomplishments include improvements in operations, monetary savings, and increased efficiency.

DoDD 5160.2 lists the following purposes and objectives for MAC:

- (1) Improve the effectiveness and economy of airlift service throughout DoD
- (2) Ensure that approved emergency and wartime requirements of DoD are met
- (3) Provide the level of DoD airlift capability and organization for (2) above, having due regard for available commercial airlift
- (4) Integrate into a single military agency all DoD transport-type aircraft engaged in scheduled point-to-point service

- (5) Develop and guide peacetime use of airlift services in a manner that will enhance emergency and wartime airlift capability, achieve greater flexibility and mobility of force, and increase logistics effectiveness economy
- (6) Procure, control, operate, and administer services related to airlift transportation and, as assigned by SecDef, provide services other than transportation.

In order to monitor the performance of these duties, a five-part quarterly report is required. An explanation of the data reported in each part appears under "Organization."

Data Collection

Each transportation operating agency has its own management information system to obtain the data necessary for its reports to OSD. For each agency, the system is composed of several subsystems containing information in specific areas. The reports are prepared manually in the formats required by OSD.

MAC's management information system is called the MAC Integrated Management System (MACIMS). It consists of five major subsystems: Mission Management, Airframe Management, Aircrew Management, Transportation Management, and Airlift Services Industrial Fund Reporting. Each area has one or more subsystems supporting it. The data contained in these subsystems, where operational, include: aircraft status, cargo moved, load factors, fuel management, crew member status, passengers moved, and financial data.

MSC's system is called the Sealift Command Information System (SEACOMIS) and consists of six functional subsystems: Sealift Resources Management, Financial Resources Management Strategic Planning, Logistics/Maintenance Information, Personnel Management, and Scientific/Engineering Applications. Not all of these subsystems are presently operational. As with MACIMS, each area is supported by one or more subsystems. Data contained in these subsystems include: operating costs, cargo moved, status of ships, fuel utilization, and performance of specific ships by route. The subsystems are updated periodically; the frequency of the updates varies with the subsystem.

The management information system for MTMC is called Automated System for Transportation Data (AUTOSTRAD), and is composed of six major information subsystems: Passenger Traffic Management System, Freight Automated Transportation System, Terminal Management System, Worldwide Household Goods Information System, Mobility Planning Data System, and Command and Administrative Data System. As with the other systems, each AUTOSTRAD subsystem is in turn composed of one or more subsystems. Information available from these subsystems includes: passenger movement

statistics, GBL data, load lists, carrier performance data, and cost data. All subsystems of AUTOSTRAD are presently operational.

Organization

MAC's quarterly report contains a narrative explanation of that quarter's accomplishments, tables of the information referred to in DoDD 5160.2 as Part I - Part V, and, when appropriate, a table of supplemental information. Part I, "Quarterly Statistical Summary," supplies data for the quarter and cumulatively for the fiscal year on passenger movement, cargo movement, and aircraft assigned, and a financial summary. Part II, "Quarterly MAC Traffic Report," states the number of passengers moved and the amount of cargo moved in terms of Military Department, other customers, and total. Part III, "Quarterly MAC Report of Military, Commercial Capabilities Utilized," compares the quarterly total flying hours and the average daily flying hour rate achieved for the C-5s and C-141s with those programmed in the annual Operating Budget. It also reports for comparison the ton miles and costs for passengers, cargo and mail moved commercially, and the amount planned for commercial augmentation in the Operating Budget. Part IV, "Quarterly Report of MAC CONUS APOE Operations," gives total cargo moved, total personal property moved, and number of cargo flights (C-5, C-141, and commercial) outbound to overseas areas for each aerial port in CONUS. Part V, "Quarterly Statement of Revenue and Expense," reports programmed and actual revenues and expenses of both industrial and non-industrial funds.

The MTMC quarterly report gives a narrative explanation, graphs, and tables of the information required by DoDI 4100.31. Topics include: savings, financial data, inland traffic, international traffic, passenger traffic, personal property, and command highlights. Statistical data on workload and performance, major commodity flow, freight traffic, personal property, passenger traffic, cargo and passengers shipped through CONUS water ports, and average costs and average haul for DoD GBL CONUS freight traffic and personal property traffic are given in tabular form at the end of this report. The data are reported in terms of number of shipments, tons, ton-miles, number of travel requests, passengers, passenger-miles, and cost. These data elements are given for the present quarter, the previous quarter, cumulatively for the fiscal year, and for the previous fiscal year.

MSC submits its report in two parts. Part I, "MSC Annual Command Report," is the financial and statistical review for the fiscal year. Part II, "Financial and Statistical Report," is produced quarterly in response to DoDI 4100.31. The quarterly report is divided into four sections: cargo, petroleum, ships, and personnel, and is composed totally of tables giving inventories, routes, commodities and carriers. The annual report

summarizes the year's data, gives narrative explanations, and reports the data for the present fiscal year with that of the previous fiscal year. It contains financial and statistical tables on income and expenses, distribution of costs, commercial payments, budget statistics relating actual to programmed amounts, and cargo traffic statistics in measurement tons, miles carried, and by commodity. Together with these reports, MSC prepares a monthly financial statement, which reports income and expenses from the beginning of the fiscal year through the month of the report.

Historical Data

For each of the transportation operating agencies, the respective comptroller's office keeps historical data. MAC has data available from FY 1963 to present. MSC has Part I, "MSC Annual Command Report," available from FY 1951. MTMC maintains data from FY 1958.

Real and Personal Property of the DoD

The Real and Personal Property of the DoD Report contains DoD inventories of fixed property, installations, major equipment items and supplies stored by the Military Departments. This report is unclassified and submitted annually to the President and Congress. The Directorate for Information Operations and Control, OASD(C) prepares the report from data submitted by the DoD Components for each fiscal year. The real property data are a summarization of the real property inventories prepared in compliance with DoDI 4165.14. The reporting requirements and formats for the Real and Personal Property of the DoD Report are specified in DoDI 7500.1.

Background

SecDef is required by the National Security Act of 1947 to maintain records on DoD property on both a quantitative and monetary basis, and to report to Congress and the President once a year. Two DoDIs concerning real property were issued in order to obtain the data necessary to comply with this requirement. DoDI 4165.14, "Inventory of Military Real Property," requires each DoD Component to maintain an inventory of real property and provides uniform procedures for doing so. This Instruction was revised in December 1966 from its 1958 version. DoDI 7500.2, "Accounting for Military Real Property in the DoD" (October 1966), provides procedures for the financial accounting of real property. It classifies real property into either (1) land and rights therein, (2) buildings, or (3) all other. Real property is accounted for at acquisition cost, and not revalued after acquisition.

Military personal property covers supply system inventories, including stock funds, and personal property other than supply system inventories, including weapons, plant equipment, and industrial fund inventories. DoDI 4140.18, "Management and Transaction Reports for Materiel Assets" (April 1970), requires each DoD Component to report semi-annually on the status, condition and purpose of principal and secondary items, and prescribes the format for doing so. Based on the stratification reports produced as a result of this Instruction, a summarization is provided for OASD(C).

DoDI 7500.1, "Report on Real and Personal Property" (August 19, 1966), provides the DoD Components with instructions and reporting formats for providing data to OASD(C). This Instruction covers data reflecting world-wide inventories of military real property and DoD-owned personal property, comprising supply system inventories, excess surplus property, weapons and other items of military equipment, and plant equipment. It also covers data reflecting the value of construction in progress.

Objectives

The objective of this report is to provide OSD with the financial and quantitative status of DoD real and personal property, in order to maintain records on this data as prescribed by the National Security Act, and to report to Congress and the President annually. The purpose of the Instruction which authorizes this report is to provide the Military Departments and Defense Agencies with formats and reporting requirements for the submission of statistical data to OASD(C).

Data Collection

Since OASD(C) compiles the Real and Personal Property Report from reports submitted by the Military Services and Defense Agencies, the appropriate data must be maintained and updated by each Component. Each Service maintains its inventories in a slightly different way. In terms of real property, the Air Force integrates the data into BEAMS. The Navy, on the other hand, has a separate data base in the Navy Facilities System for its real property inventory, and the Army is in the process of implementing IFS, which will include its real property accounting and inventory.

Organization

The Real Property Report of the DoD includes both statistical data and narrative explanations of the inventory and accounting of DoD real and personal property. The report is divided into three parts - military real property, military personal property, and DoD-controlled real and personal property in the custody of contractors. The real property section includes inventories of real property and construction in progress by Military Department. Data is reported in terms of cost, acreage, and the ten largest categories of real property in CONUS. The narrative explanations within that section relate the data for the fiscal year being reported to that of the previous fiscal year. The personal property section is divided into three areas - inventory of military equipment and supplies in the consolidated supply systems of the stock funds, personal property other than supply systems inventories, and the National Industrial Reserve. The first area includes a discussion of, and data on, each DoD Component's stock fund, relating the data to the previous years' figures. The second area covers weapons and other military equipment in use, plant equipment, inventories held in industrial funds, excess, surplus, and foreign excess personal property and government-provided materiel. The data reported here is again given by DoD Component, and is discussed in terms of the previous years' figures.

Historical Data

Although all the tables and charts within the Real and Personal Property of DoD Report are only for the fiscal year being reported, reports from previous fiscal years may

be obtained from the Directorate for Information Operations and Control, OASD(C). In most cases, the reported data is available from FY 1954 to the present.

APPENDIX 3

COLLECTION OF DOD DIRECTIVES AND INSTRUCTIONS

This Appendix lists and briefly describes the applicable DoD Directives and Instructions identified during the course of this study. The documents are listed under each of the four logistics functions examined: supply, maintenance, transportation, and installations and housing. For each of these functions, the documents are listed in order of numerical identification. To the extent possible, the latest version of the applicable Directive or Instruction is listed.

The Directives and Instructions are also discussed in the main body of the text, since they form the administrative basis for the management control and reporting requirements stipulated by OSD. As will be seen by a reading of Appendix 3, there is no uniform basis for issuing Directives and Instructions. Each functional area has published those that it needs to perform its part of the management process. Also, it is not possible to identify readily why certain documents are specified as Directives or as Instructions.

SUPPLY

DoDD 4000.8 Basic Regulations for the Military Supply System, June 13, 1963.

This Directive reiterates that the U. S. Code provides for an efficient, economical, and practical operation of an integrated supply system to meet the needs of the Military Departments without duplicate or overlapping operations or functions.

DoDD 4000.19 Basic Policies and Principles for Interservice Interdepartmental and Interagency Support, March 27, 1972.

This Directive is aimed at providing guidance for all DoD Components in achieving increased effectiveness and economies through the systematic use of interservice concepts. ASD(I&L), in conjunction with ASD(C), shall monitor and guide the achievements of increased effectiveness and economies in DoD operations by fostering extensive and systematic use of the interservice support concept. ASD(I&L) will also evaluate performance of the Defense Retail Interservice Support Program, based on summary progress reviews developed by the Director, DSA to show overall installation/activity participation in interservice retail support arrangement.

DoDI 4100.31 Reports on Single Manager Operations, September 2, 1960.

The purpose of this Instruction is to prescribe certain reports required by OSD relative to the operations of the various Single Managers in their respective areas of

responsibility. It is intended that the data in these reports will be used as a basis for the formulation of sound and effective management policies and decisions. From these data, comparisons between the reporting period and other time periods can be made. Each Single Manager will prepare and submit a quarterly report, which will cover the following points in his area of responsibility: statistical data and narrative report.

DoDD 4100.37 Retention and Transfer of Materiel Assets, June 7, 1974.

The objectives of this Directive are to:

1. Provide the approved definitions for inventory stratification with respect to acquisition objectives and retention of materiel.
2. Establish the parameters for retention and transfer of materiel.
3. Apply the retention and transfer policies established herein to all materiel (principal and secondary items), whether financed by appropriations or by stock funds as specifically differentiated in the Directive.

DoD Components' ICPs will normally retain assets up to the sum of the Approved Force Acquisition Objective (AFAO), Approved Force Retention Stock (AFRS), Economic Retention Stock (ERS) and Contingency Retention Stock (CRS). Transfers of assets between DoD Components within its AFAO will be reimbursable. Transfer of assets in excess of the AFAO of a DoD Component to another Component will be nonreimbursable.

DoDD 4130.2 The Federal Catalogue System, August 19, 1975.

This Directive establishes current policies, objectives, and responsibilities governing DoD application, operation, and maintenance of the Federal Catalogue System. It assigns responsibilities within DoD. It authorizes the publication of a DoD manual, "Federal Catalogue System Policy Manual." All items of supply and related FCS practices, processes, services, and publications that support the functions of materiel management are included within the scope of this Directive. These include: identification; design; standardization; item entry control; maintenance (overhaul and repair); materiel planning, including the development and review of materiel requirements and inventory control; provisioning; procurement; preservation and packaging; transportation; warehousing; excess redistribution; and surplus disposal.

The objectives of the FCS within the DoD include:

1. Provision of a uniform system of item identification and nomenclature to describe, classify, and number each item included in the FCS so that an item of supply is identified by a single stock number.
2. Assembly and maintenance of a total information record, integrated to include item characteristics and selected technical and materiel management data for each item of supply incorporated into the FCS.

DoDD 4140.1 Inventory Management Policies, October 12, 1956.

The following are some of the policies defined under this Directive:

1. Each Military Service shall maintain records for each item of supply in such a manner that its inventory composition can be ascertained on a quantitative and monetary basis with respect to condition and purpose for which held; i.e., peacetime operating stocks, mobilization reserve stocks, economic retention stocks, and excess stocks.
2. Each item of materiel for military or industrial use within a Military Service, regardless of manner of acquisition, shall be under the cognizance of but one ICP.
3. Each ICP shall maintain a worldwide inventory of all items under its cognizance.

DoDI 4140.2 Management of Mobilization Reserve Stock, July 28, 1954.

The basic objective of DoD is to be prepared to support national policies and to defend successfully the security of the nation in any emergency. A primary element of military readiness is the sound and careful establishment and management of adequate reserve stocks. Accordingly, each Military Department and other agency is responsible for, and will maintain, a positive and continuing Mobilization Reserve Materiel Program, designed to ensure sound establishment, maintenance, and management of Mobilization Reserve Stocks. The purpose of this Instruction is to prescribe the DoD policies governing the management of mobilization reserve stocks by the Military Departments with respect to retention, storage, and care and preservation of all materiel available, or to become available, for application against the Mobilization Reserve Materiel Requirement (MRMR).

DoDI 4140.7 Control, Supply and Positioning of Materiel, January 12, 1965.

This Instruction establishes policies, procedures, and guidance for:

1. Control, supply and positioning of materiel within the DoD
2. Determination of management methods and sources of supply for items of supply assigned to ICPs of the Military Departments and the DSA.

The policies in this Instruction specify such guidance as:

1. For each item under its cognizance, the appropriate ICP will determine and prescribe the method of management to be employed.
2. Each cognizant ICP will determine the feasibility and desirability of either centralized management or decentralized management for each item assigned to it that is to be retained in its supply system as an authorized item of supply.

DoDI 4140.18 Management and Transaction Reports for Materiel Assets,
April 16, 1970.

This Instruction prescribes revised semi-annual reporting of the status, condition, and purpose of world-wide DoD assets of principal items and of supply system assets of

secondary items; the transactions which account for changes in inventories of materiel assets, regardless of how funded; and the value of additional inventory.

The inventory management reports prescribed herein are as follows:

1. DD Form 1138 - Statement of Inventory Changes
2. DD Form 1138-1 - Stratification Report of Principal Items
3. Table II - Central Item Stratification
4. Table III - Local Secondary Item Stratification

The DD forms and formats, together with an appropriate narrative, are prepared for each semi-annual period, ending June 30 and December 31. The narrative portion of the report provides an analysis of significant supply and financial results and trends, comments on supply and financial management operations, and the progress attained, as well as corrective actions initiated or planned.

DoDI 4140.19 Phased Provisioning of Selected Items for Initial Support of Weapons Systems, Support Systems, and End Items of Equipment, May 1, 1968.

This Instruction is a reissued instruction to:

1. Promote increased use of phased provisioning as a management technique to defer procurement of selected items (spares and repair parts) during initial provisioning
2. Prescribe the conduct of a time-phased series of provisioning reviews and redeterminations of the range and quantity of selected items to be procured for initial support
3. Establish an annual report to assist ASD(I&L) in evaluating the effectiveness of implementation of phased provisioning throughout DoD.

Phased provisioning is a management refinement to the provisioning process, whereby procurement of all or part of the total computed quantity of selected items is deferred until the later stages of production, thereby enhancing the ability of the provisioning activity to predict requirements more reliably.

DoDI 4140.20 Base Supply Levels of Reparable Type Items, August 26, 1963.

This Instruction prescribes policies for establishing requisite supply levels to achieve optimum response to demand at minimum cost for all categories of reparable-type items at individual posts, camps, stations and bases, tailored to recognize individual item characteristics, and response time from base repair and from external resupply sources.

This Instruction applies to each reparable-type item that has, or is expected to have, maintenance removals and replacements at individual bases of such a frequency and rate as to require the maintenance of stock levels at those bases to support the demand. It also applies to each element of the DoD which determines supply levels for bases.

DoDI 4140.21 Management of War Reserves for Integrated Items Assigned to the
Military Departments, the Defense Supply Agency, and the General
Services Administration, December 31, 1974.

This is a reissued Instruction to:

1. Provide the policies and responsibilities for reporting, reviewing, and validating DoD Component War Reserve requirements for items assigned to Integrated Materiel Managers (IMMs)
2. Provide policy for the management, positioning, allocation, and release of war reserves for items assigned to the DoD Components for integrated materiel management
3. Establish the policy to reconstitute war reserve stocks that are issued to satisfy peacetime requirements or to reinvest in other items using the peacetime operating funds that are made available by these issues
4. Affirm acceptance by GSA of responsibility to provide responsive supply support to the DoD under wartime/emergency conditions.

The provisions of this Instruction apply to the Military Departments and DSA, and by agreement, to the GSA. This Instruction governs the management and control of war reserves assigned to the DSA and other DoD IMMs for integrated management and, by agreement, to the GSA, and outlines the agreement with the GSA for the responsive support of the War Reserve Materiel Program in support of approved forces.

DoDI 4140.24 Requirements Priority and Asset Application for Secondary Items,
September 10, 1969.

This Instruction prescribes a uniform sequence of requirements priority and asset application for stratification of secondary items. The purposes of the stratification are to provide:

1. A uniform method of portraying
 - a. The DoD secondary item inventory of supply system assets stratified by purpose for which held
 - b. The readiness of the DoD supply systems to supply materiel as specified in logistic guidance documents
2. A means of uniformly generating and portraying secondary item funding requirements of the DoD Components in preparation for, and support of, their budget submissions as specified in logistic guidance documents
3. Uniform requirements elements and a uniform sequence of allocating secondary item assets to requirements for related supply management operations: retention and transfer policy; management of the materiel pipeline, including peacetime operating and safety levels of supply; management of mobilization reserve stocks; and selective inventory management of secondary items.

DoDD 4140.26 Integrated Materiel Management of Consumable Items, February 26, 1972.

This Directive:

1. Establishes policy and outlines broad guidelines for the development and operation of a DoD-wide program of integrated materiel management for all consumable items used by DoD Components. The objective of the program is to eliminate duplication of item management at the wholesale level.

2. Authorizes the publication of "DoD Integrated Materiel Management Manual for Consumable Items (DoD 4140-26-M)."

The statement of policies includes:

1. There will be only one wholesale manager for any consumable item.
2. The Military Services and designated Defense Agencies other than DSA will manage the consumable items in FSCs designated as Weapon System Oriented FSCs, and those consumable items in assigned Commodity Oriented FSCs which meet the Item Management Coding (IMC) criteria for Service management retention.

3. The DSA, the GSA or designated DoD Component activities will manage all consumable items in assigned Commodity Oriented FSCs except those coded for retention of management by the Military Services in accordance with IMC criteria.

DoDI 4140.33 Grouping of Secondary Items for Supply Management Purposes, June 12, 1968.

This Instruction establishes uniform DoD criteria for the grouping of secondary items to be accorded varying degrees of management intensity in the supply management process. Secondary items will be identified as consumables and reparable, and will be further arranged into four groupings, based on the dollar value of predicted annual demand or annual issues. The degree of intensified management applicable to individual line items will normally be determined by dollar value of predicted demands or issues. However, the degree of management intensity applied may also vary considering the monetary inventory values and/or the criticality/essentiality of the item.

DoDI 4140.35 Physical Inventory Control for DoD Supply System Materiel, June 12, 1972.

This Instruction provides policies, procedures, performance objectives, and effectiveness reporting for improving the accuracy of inventory control and asset information in the supply system of the DoD. Basic elements of the physical inventory control program prescribed by this Instruction are aimed at establishing:

1. Uniform and improved practices for maintaining accurate records, conducting physical inventories, research of potential inventory discrepancies, and quality control of work processes affecting inventory accuracy

2. Comparable measures of performance for cost-effectiveness analysis among the various inventory control systems

3. Reporting procedures necessary to measure the effectiveness of physical inventory control at selected points in the DoD supply system.

DoDI 4140.37 Asset Knowledge and Control of Secondary Items, August 7, 1969.

This Instruction establishes the authority and responsibility of ICPs to extend asset knowledge and control over selected items to supply and operating echelons beyond their current wholesale distribution activities. Through the extension of asset knowledge and control of selected items, ICPs will be in a better position to: determine more exact materiel requirements, position assets, take redistribution actions, control excesses, improve the budgetary processes, and provide maximum support with a minimum investment level.

DoDI 4140.39 Procurement Cycles and Safety Levels of Supply for Secondary Items, July 17, 1970.

This Instruction establishes policy for determining procurement cycles and safety levels of supply at ICPs for non-reparable secondary items, and illustrates the basic mathematical functions that are to be used and their applications in an inventory model.

Although the provisions of this Instruction cover only non-reparable secondary items, the general policy statements encompass all secondary items, including to the extent feasible, reparable items which will be covered in detail in a later Instruction.

The inventory policy to be followed by the Military Departments and the DSA in conformance with this Instruction is to minimize the total variable cost relative to ordering and holding inventory at ICPs and their stock points, subject to a constraint on the average number of days forecast for delay in the availability of materiel for release by item managers, or by the Automatic Data Processing (ADP) systems supporting the item managers.

DoDD 4140.40 Basic Objectives and Policies on Provisioning of End Items of Materiel, February 20, 1973.

This Directive sets forth basic objectives and policies governing the provisioning for initial support of end items of materiel acquired by contract from commercial/industrial sources. In consonance with DoD logistics concepts and objectives, this Directive is intended to promote effective, efficient, and timely provisioning for initial support by and among the using Military Services, the Defense Agencies, their industry suppliers, and the GSA.

This Directive is applicable to the Military Departments and DSA in the planning, programming, selection, and acquisition of items for the initial support of end items of

materiel. The scope of this Directive encompasses all end items of materiel acquired by DoD Components for which a DoD maintenance capability (e.g., servicing, repair, and overhaul) is anticipated.

The principal objective of provisioning is to ensure the timely availability of minimum initial stocks of support items at using organizations and maintenance and supply activities to sustain the programmed operation of end items until normal replenishment can be effected, and to provide this support at the least initial investment cost.

DoDI 4140.41 Government-Owned Materiel Assets Utilized as Government-Furnished Materiel for Major Acquisition Programs, July 26, 1974.

This Instruction provides policy and guidance for promoting optimum economic utilization of available government-owned materiel assets as Government-Furnished Materiel (GFM), in lieu of Contractor-Furnished Materiel (CFM), in production contracts for major systems and equipment. It stresses management recognition of the potential savings involved through the effective utilization of existing government-owned materiel assets.

In order to achieve more cost-effective systems and equipment acquisitions, DoD Components will screen the DoD inventories for government-owned materiel assets and these assets will be utilized in lieu of procurement in acquisition programs for military-designed and commercial materiel, when the results of an economic analysis show that GFM is the most cost-effective manner to accomplish this task.

DoDI 4140.42 Determination of Initial Requirements for Secondary Item Spare and Repair Parts, August 7, 1974.

This Instruction establishes DoD policy in support of the basic objectives and policies stated in DoDD 4140.40, relative to stockage criteria and the determination of requirements for secondary item spare and repair parts, beginning with initial provisioning and continuing through the Demand Development Period (DDP).

In order to achieve maximum initial support within available resources, DoD Components will provide peacetime initial spare and repair parts under a concept that requires minimum supply response time. This concept will be implemented through policies that provide a coordinated approach to all elements: program development; the depth of stocks provided in the initial requirements computation; the range of items selected for initial stockage; and requirements computation policy, from the beginning of a new program to the end of the DDP for each item. These policies require that minimum supply response time be achieved through a cost-effective approach of balancing pipeline inventory and costs related to holding inventory. Thus the cost of obsolescence, and other aspects of holding cost, are considered when determining whether or not to stock an item,

and the depth of stockage is initially minimized in order to eventually achieve an optional inventory mix based on actual demands.

DoDI 4230.4 Standard Method for Computation of Spare Engine Aircraft Procurement Requirements, July 20, 1971.

This Instruction promulgates standard DoD forms and instructions for the computation of spare aircraft engine requirements, as developed through a cooperative effort by a joint Military Department/OASD(I&L) Task Group. This Instruction also establishes policies applicable to this standard computation method.

MAINTENANCE

The basic maintenance objectives policies and reporting concepts through which OSD controls and shapes maintenance management and production are expressed in key DoDIs and DoDDs. The contents of these Instructions and Directives lend insight into how OSD has involved itself in the establishment of maintenance policy. A brief review of selected key Directives and Instructions follows.

DoDD 4100.15 Commercial or Industrial Activities, July 8, 1971.

DoDI 4100.33 Operation of Commercial or Industrial Activities, July 16, 1971.

This Directive and the supporting Instruction set DoD policy to conform with OMB circular A-76, requiring maximum reliance on the private sector for provision products and services. DoD Components are instructed to initiate new commercial or industrial activities only if necessary for combat support, if commercial sources are not available, or if costs are higher from commercial sources. Essential to military readiness and control are other criteria for organic commercial/industrial activity. Instruction 4100.33 further elaborates procedures and criteria to be used in determining whether to start, continue, curtail or discontinue commercial or industrial activities. More specific guidance relative to the criteria set forth in Directive 4100.15 is provided.

DoDD 4151.1 Use of Contracts and Government Resources for Maintenance of Materiel, June 20, 1970.

This Directive is related to DoDD 4151.16 below, relative to information systems, organic capabilities, and consolidation of depot maintenance activities. The most important guidance prescribed in this Directive requires that the Services retain no more than 70% of mission-essential maintenance workload capacity in organic facilities. Capacity and mission-essential workloads are defined in the Directive.

DoDI 4151.12 Policies Governing Maintenance Engineering Within the Department of Defense, June 19, 1968.

This Instruction prescribes the minimum responsibilities to be carried out by the maintenance engineering activity—the development of criteria and requirements during

the acquisition of new equipment. This Instruction also calls for uniform systems for collecting historic maintenance performance data and, for mission-essential equipment, the collection of maintenance demand pattern by level of maintenance performance.

DoDI 4151.15 Depot Maintenance Support Programming Policies, June 24, 1969.

This Instruction requires the development of automated programming systems for depot maintenance, and provides guidelines and standards for these systems. The intent of these systems is to project depot workloads to permit reprogramming of projections as force structure or funding changes are made.

DoDD 4151.16 DoD Equipment Maintenance Program, August 30, 1972.

This is a basic Directive that establishes objectives and policies for maintenance of equipment. Among the 22 policy statements included are those that establish the requirement for organic depot capabilities to maintain mission-essential equipment, require information for automated systems to program depot maintenance and require uniform cost accounting and production accounting systems based on total costs.

DoDI 7220.21 Uniform Criteria for Repair Cost Estimates Used in Determination of Economical Repairs, May 1, 1973.

This Instruction establishes criteria to determine eligibility of materiel for economic repair. Economic repair is repair whereby the cost is exceeded by the value of the asset, given its remaining life and replacement value. The Instruction specifies that cost estimates of repair are to include direct labor, direct material, indirect expenses and other attributable charges.

DoDI 7220.29 Guidance for Cost Accounting and Production Reporting for Depot Maintenance and Maintenance Support, October 20, 1975.

This Instruction was issued in 1968, under the title "Uniform Depot Maintenance Cost Accounting and Production Reporting System," and prescribed a uniform depot-level cost accounting, oriented to weapons systems and based on total cost regardless of funding source. The data from this system have been used by OSD to produce three annual reports which are described in detail in Appendix 2 of this report. The Instruction was cancelled and re-issued under the above title, and a new manual specifying accounting techniques is being developed and implemented by the Services. The major objective of the revised system is to provide comparability of cost data across the Services. The new system is to begin operating in October 1976. (See also Appendix 2.)

DoDI 7410.4 Regulations Governing Industrial Fund Operations, September 25, 1972.

This Instruction provides guidance on the operation of DoD industrial funds, which are the dominant mode of operation for depot facilities within the Services.

TRANSPORTATION

DoD 4000.23-M Military Supply and Transportation Evaluation Procedures (MILSTEP),
November 13, 1972.

This operating manual implements DoD policies and prescribes standard procedures for evaluating supply and transportation performance. MILSTEP is designed to produce uniform DoD-wide logistic performance measurement reports. The procedures are applicable to the Military Services and DSA. See "Reporting, Accounting, and Budgeting" for more detailed information.

DoDD 4500.9 Transportation and Traffic Management, June 21, 1976.

This Directive promulgates general policies concerning use of DoD-owned transportation and commercial transportation for movement of cargo and passengers. See "Organization and Responsibilities" for discussion of ASD(I&L) responsibilities.

DoDD 4500.36 Management, Acquisition, and Use of Motor Vehicles, July 30, 1974.

This Directive restricts the use of all DoD-owned and controlled motor vehicles to official purposes only. It authorizes a limited number of officials to use government vehicles between their domiciles and their place of employment.

DoDI 4500.37 Ownership and Use of Containers for Surface Transportation and
Configuration of Shelters/Special-Purpose Vans, October 5, 1972.

This Instruction sets forth the policy that containerized shipments will be the preferred method for transport of military cargo, and specifies procedures governing use and procurement.

DoDI 4500.38 Administrative Support Air Transportation, February 12, 1973.

This Instruction sets forth policies for assignment to, and use by, bases and stations of administrative support aircraft, and for acquisition of commercial aircraft for such use when military aircraft are not available or appropriate.

DoDD 4500.39 Motor Vehicle Management, March 28, 1975.

This Instruction sets forth policies on minimization of motor vehicle use, and prescribes procedures for determining what constitutes "official purposes" and methods of transportation.

DoDI 4500.41 Transportation Container Adaptation and Systems Development
Management, April 16, 1976.

This Instruction establishes the Joint Container Steering Group to ensure the continuity of an effective management structure for container adaptation and systems development.

DoDD 4515.13 Transportation by Department of Defense-Owned and Controlled Aircraft, October 31, 1970.

This Directive assigns the Air Force the responsibility for publishing a single DoD regulation on use of DoD-owned and controlled aircraft.

DoD 4515.13-1 Air Transportation Eligibility, February 6, 1975.

This regulation, produced under the provisions of DoDD 4515.13, prescribes transportation policies for DoD-owned and controlled aircraft, reimbursement for the use of such transportation, space-required passenger and cargo eligibility, and space-available passenger eligibility.

DoDD 4035.1 Department of Defense Postal Operations and Related Services, August 1, 1973.

This Directive delineates authorities and responsibilities for dealing with the U. S. Postal Service, and for operation of DoD postal activities and transportation of mail. It authorizes use of Military Post Offices, and establishes a Defense Postal Policy Committee.

DoDD 5126.22 Assistant Secretary of Defense (Installations and Logistics), January 30, 1961.

This Directive is the basic charter for the ASD(I&L). It specifies that transportation is one of the functional fields for which he is responsible.

DoDD 5160.2 Single Manager Assignment for Airlift Service, October 17, 1973.

This Directive is the basic MAC charter, and describes MAC's functions and responsibilities, as well as those of JCS, the Military Components, and the other agencies, MSC and MTMC. See "Organization and Responsibilities" for further details.

DoDD 5160.10 Single Manager Assignment for Ocean Transportation, March 24, 1967.

This Directive is the basic MSC charter. See "Organization and Responsibilities" for further details.

DoDD 5160.53 Single Manager Assignment for Military, Land Transportation, and Common-User Ocean Terminals, March 24, 1967.

This Directive is the basic charter for the Military Traffic Management and Terminal Service, now MTMC. See "Organization and Responsibilities" for further details.

DoDD 7410.4 Regulations Governing Industrial Fund Operations, September 25, 1972.

This Directive prescribes the procedures by which the Military Services and agencies may use industrial funds; it applies, therefore, to MAC, MSC, and MTMC.

DoDI 7410.5 Financial Reports for Department of Defense Industrial Funds, January 3, 1975.

This Instruction prescribes a single uniform system of reporting on industrial funds, including formats for statements of financial conditions and of revenues and costs.

INSTALLATIONS AND HOUSING

DoDI 4120.14 Air and Water Pollution Control, May 14, 1971.

This Instruction establishes DoD policies for developing and submitting plans for installing improvements needed to abate air and water pollution emanating from DoD facilities.

DoDD 4165.2 DoD Real Property Maintenance Activities Program, February 21, 1976.

This Directive describes the objectives and policies of the DoD RPMA program, including RPMA programming and appraisal, establishment of the Real Property Maintenance Council, consolidation of RPMA, contracting guidelines, and environmental protection guidelines.

DoDI 4165.3 Department of Defense Facility Classes and Construction Categories, September 1, 1972.

This Instruction establishes uniform Facility Classes and Construction Categories for use in identification and classification of real property.

DoDD 4165.6 Real Property; Acquisition Management, and Disposal, September 15, 1955.

This Directive sets forth DoD policy with respect to the acquisition, management, and disposal of real property and delegates authority necessary to accomplish them.

DoDI 4165.12 Prior Approval of Real Property Actions, July 23, 1973.

This Instruction provides guidance and procedural requirements for obtaining prior approval for the acquisition and disposal of real property. Special consideration is given to (a) base closures and reductions, (b) Congressional notifications, (c) release of information on real property actions pending formal public announcement, and (d) compliance with statutory requirements and administrative regulations.

DoDI 4165.14 Inventory of Military Real Property, December 21, 1966.

This Instruction describes uniform procedures for maintaining the DoD Inventory of Real Property and an abridged inventory in summary form for use by interested offices of DoD and Congress.

DoDD 4165.20 Utilization and Retention of Real Property, August 29, 1958.

This Directive establishes policies and procedures for ensuring that Military Department real property holdings are limited to the minimum required, that such holdings are in balance with latest mobilization concepts, and that such holdings are utilized in an economical and practical manner.

DoDI 4165.39 Criteria for Improvement, Replacement, Retention and Disposition of Substandard Family Housing, September 22, 1964.

This Instruction sets forth standards and reporting requirements for the management of substandard family housing.

DoDI 4165.40 Form for Transfer and Acceptance of Military Real Property (DD Form 1354), November 14, 1961.

This Instruction describes the form to be used for recording of primary documentation upon transfer or acceptance of real property.

DoDI 4165.44 Assignment, Utilization, and Inventory of Military Family Housing, January 28, 1975.

This Instruction sets priorities for assigning family housing quarters, policy for occupancy, adequacy, and utilization of these quarters, and requirements for reporting utilization and maintaining an inventory of family housing units.

DoDI 4165.45 Determination of Family Housing Requirements, January 19, 1972.

This Instruction establishes policy, criteria, and procedures for determining family housing requirements within the framework of the PPBS in order to (1) assist in the effective management of the DoD Family Housing Program, and (2) form a basis for reviewing and processing changes in the FYDP.

DoDI 4165.47 Adequacy, Assignment, and Occupancy of Bachelor Housing, October 23, 1974.

This Instruction prescribes minimum standards of adequacy and occupancy, and priorities of assignment for bachelor housing.

DoDI 4165.50 Administration and Operation of the Homeowner's Assistance Program, February 11, 1972.

This Instruction provides financial assistance to eligible military and civilian employee homeowners in situations when the real estate market is adversely affected by the closure of, or by the reduction in the scope of operation at, a military base or installation.

DoDI 4165.54 Bachelor Housing; Determining Requirements and Programming Construction, October 3, 1972.

This Instruction sets forth guidance and procedures for determining bachelor housing requirements. The submission of these requirements to ASD(I&L) assists in developing an overall program for ensuring availability of adequate bachelor housing. The data is used (1) to revalidate approved projects prior to execution of construction, (2) to justify projects to be included in the MilCon Program and validate projects in the FYDP, and (3) to support proposals for amending the FYDP.

DoDI 4165.58 Program Control for Real Property Maintenance Activities, August 8, 1973.

This Instruction outlines the concepts and assigns responsibilities for the development of an integrated DoD-wide program control system for RPMA. It prescribes uniform cost accounts and cost accounting standards.

DoDI 4270.1 Department of Defense Construction Criteria Manual, September 18, 1972.

This Instruction authorizes the publication of DoD 4270.1-M, which contains policy and criteria governing all the planning and design of military construction.

DoDI 4270.3 Military Public Works Basic Record Keeping Requirements, October 13, 1955.

This Instruction establishes record-keeping requirements for the execution of construction at installations under the control of the Military Departments.

DoDI 4270.21 Policy and Criteria for Operation, Maintenance, and Repair of Defense Family Housing, October 2, 1973.

This Instruction defines responsibilities and sets standards for the operation, maintenance, and repair of military family housing. In particular, occupant versus command responsibility is delineated.

DoDI 5100.37 Delegation of Authority (Military Departments and Defense Agencies) to Approve Family Housing Projects Performed Pursuant to 10 U. S. C. 2674 (Minor Construction), April 7, 1971.

This Instruction delegates authority for approving the use of minor construction funds for alterations, additions-expansions-extensions, and replacement of pertinent family housing facilities.

DoDD 5100.50 Protection and Enhancement of Environmental Quality, May 24, 1973.

This Directive assigns responsibilities and establishes policies and procedures for (1) conforming to federal policy, (2) establishing the DoD Committee on Environmental Quality, and (3) establishing the SecDef Environmental Quality Award.

DoDD 5100.54 Homeowners Assistance Program, December 29, 1967.

This Directive assigns responsibility for the development and administration of the Homeowners Assistance Program as previously described in DoDI 4165.50.

DoDD 5100.67 Department of Defense Bachelor Housing Program, May 5, 1972.

This Directive defines the scope of the DoD Bachelor Housing Program and assigns responsibilities pertaining to its management, financing, operation, and morale and welfare aspects.

DoDD 5126.29 Delegation of Authorities to the Assistant Secretary of Defense (Installations and Logistics) - Military Construction, Active Forces, July 6, 1971.

This Directive delegates authority to the ASD(I&L) for making exceptions to MilCon procedures established elsewhere if such is in the national interest.

DoDD 5126.39 Delegation of Authority - Provision of Family Housing, March 4, 1971.

This Directive delegates authority to the ASD(I&L) for managing the Family Housing Program.

DoDD 5410.12 Economic Adjustment Assistance to Defense Impacted Communities, April 21, 1973.

This Directive establishes policy, assigns responsibilities, and provides procedures for carrying out an Economic Adjustment Program designed to minimize the economic impact on communities resulting from changes in Defense programs. Consideration is given to planning a strategy for adjustment, assisting displaced DoD employees, maximizing conversion of excess DoD property into civilian use, giving early warning of contract terminations, and making adequate announcements and notifications prior to action.

DoDD 5500.5 Natural Resources - Conservation and Management, May 24, 1965.

This Directive prescribes DoD policies and establishes an integrated DoD multiple-use program for the renewable natural resources in forests and woodlands, fish and wildlife, soil, water, grasslands, outdoor recreation and natural beauty.

DoDD 6050.1 Environmental Considerations in DoD Actions, March 19, 1974.

This Directive amplifies DoD procedures for including environmental impact considerations in the decision-making process, including reporting requirements.

DoDD 7040.2 Program for Improvement in the Area of Appropriations for Acquisition and Construction of Military Real Property, January 18, 1961.

This Directive sets forth basic policies for the development of planned programs by DoD for the financial management of appropriations for acquisition and construction of military real property. Included are descriptions of an integrated account structure, of authorization procedures, of budgeting limitations, and of the minor construction program (see also DoDD 4270.24)

DoDI 7040.4 Military Construction Authorization and Appropriation, July 16, 1971.

This Instruction prescribes the procedures and the reporting format for the preparation, review, and approval of requests for the annual MilCon, Family Housing, and Homeowners Assistance Authorization and Appropriation.

DoDI 7041.3 Economic Analysis and Program Evaluation for Resource Management,
October 18, 1972.

This Instruction requires an economic analysis of any proposal which involves a choice or trade-off between two or more options, even when one of the options is to maintain the status quo or to do nothing. It also establishes the Defense Economic Analysis Council under the staff supervision of the ASD(C).

DoDD 7150.3 Apportionment of Military Construction Funds, September 26, 1970.

This Directive establishes procedures for developing construction execution programs, including adjustments to such programs.

DoDD 7150.4 Department of Defense Family Housing Program, October 20, 1969.

This Directive describes and assigns responsibility for the Defense Family Housing Program. The Program includes (1) assistance to all military personnel and certain civilians in locating and utilizing privately-owned housing, including leasing, (2) provision of government-owned family housing, household equipment, furniture, and furnishings, and (3) management of Defense Family Housing property, including operations and maintenance and debt financing.

DoDD 7150.5 Responsibility for Programming and Financing of Facilities at Military
Installations Utilized by Two or More Department of Defense
Components, October 23, 1968.

This Directive assigns responsibility for programming and financing acquisition, conversion, alteration, modification, or rehabilitation of temporary or permanent facilities including utilities. In particular, it distinguishes between tenant and host responsibilities.

DoDI 7220.13 Cost Accounting for Operation and Maintenance of Military Family
Housing, December 7, 1971.

This Instruction establishes a uniform cost accounting structure and related reporting requirements for the operation and maintenance of military family housing. A categorization of housing is included.

DoDI 7500.2 Accounting for Military Real Property in the Department of Defense,
October 20, 1966.

This Instruction provides accounting procedures for recording real property transactions.

DoDI 7720.5 Progress Report on Military Family Housing Projects, October 1, 1962.

This Instruction establishes reporting procedures for monitoring the progress of authorized family housing projects.



INSTALLATIONS AND LOGISTICS

DATE: 16 June 1976

TASK ORDER SD-321-47
(Task 76-6)

1. Pursuant to Articles E-1 and E-3 of the Department of Defense Contract SD-321 with the Logistics Management Institute, the Institute is requested to undertake the following task:

A. TITLE: A Macro Analysis of DoD Logistics System

B. BACKGROUND: The DoD logistic system is really a composite of the individual logistics systems of the separate Services, augmented by DoD agencies, such as the Defense Supply Agency. The management and physical composition of the separate Service logistics systems vary widely and may not be well rationalized from a changing DoD viewpoint. An examination of this DoD logistics complex from a macro point of view would be a useful aid in understanding OSD's role with respect to DoD logistics, and in providing appropriate tools for the exercise of that role.

This task initiates such an examination. In view of its breadth, it is subdivided into three subtasks. The first subtask is to define OSD's role and responsibilities through an analysis of DoD logistics systems. The second subtask is to develop a set of logistics indicators and performance measures to be used by OSD. The third subtask is to develop an analytical framework for OSD use of the indicators in the exercise of its logistics responsibilities.

The task will be conducted in the following way: The first subtask will analyze the DoD-wide logistics complex to identify OSD's current and appropriate future role. The other two subtasks on logistics indicators for OSD use will take a DoD-wide perspective and will use the Air Force for specific analysis and testing. The logistics indicators will cover both the effect of logistics on mission readiness and the efficiency of logistics performance. The reason for a selective study is first to establish the feasibility and to demonstrate the usefulness of this approach to the OSD role in logistics.

C. SUBTASK 1 - TITLE: DoD Logistics Systems Analysis

OBJECTIVE: To describe the current Services and DoD-wide logistics systems by analyzing their functional and management characteristics in order to refine OSD's logistics role.

SCOPE OF WORK: In performance of this subtask, LMI will:

- 1) Study policies, processes, practices and systems related to logistics management, including operations and control, planning, programming, and budget activity.
- 2) Develop a description of the DoD logistics systems related to operations and control, planning, programming and budget activity, and associated information systems, covering the following:
 - a) Service logistics systems
 - b) DoD-wide logistics agencies
 - c) Interfaces among the Services and DoD-wide agencies
 - d) OSD activities for monitoring and planning logistics activities
- 3) Compare such management functions as operations and control, planning, programming, and budget activity for DoD logistics systems with those for other systems for similar purposes.
- 4) Define and specify the role which should be exercised by OSD over logistics activities conducted by various echelons of the DoD, including audit for policy conformance.

SCHEDULE: The findings of this task will be presented to the Principal Deputy Assistant Secretary of Defense (ISL) in draft form by 30 September 1976. A final report will be issued by 30 November 1976.

SUBTASK 2 - TITLE: Management Information Needs of OSD

OBJECTIVE: To develop a series of indicators for logistics oriented activities to assist OSD in exercising its responsibilities. Indicators will be suggested to reflect operational readiness and efficiency measures of logistics activities.

The indicators to be emphasized will focus on logistics activities at the DoD and Service level, where logistics is intermediate to operations, and where performance is measurable in terms of mission operations and objectives. Secondary emphasis will be placed on central support management and performance where output coincides with the logistics activity performed.

SCOPE OF WORK: In performing this subtask, LMI will:

1) Define output/performance measures; at some levels of activity the logistics output is measured by operating performance, e.g., flying hours, while at other levels the measurement is by logistics activity per se, e.g., ships overhauled, items supplied, available cargo airlift capacity.

2) Define inputs or costs--both operating costs and capital expended. Since actual input utilization is not always available, assigned manpower will be used, where necessary, as will trends in productivity. Such data may indicate the extent of slack. For some activities, capital costs and capacity are relevant; e.g., stock fund working capital levels and available ton-miles in MAC.

3) Analyze sources of data needed to support the indicators, including:

- a) Availability of data
- b) Reliability and specificity of data
- c) Consistency of data collected across Services and agencies

4) To the extent that data are readily available, compile and evaluate trends in performance and cost, devise ratio measures of productivity, and interpret ratios and trends for use in management analyses. A formal mechanism for continued compilation and evaluation will not be attempted in this preliminary feasibility effort.

SCHEDULE: A preliminary set of indicators and trend results will be presented to the Principal Deputy Assistant Secretary of Defense (I&L) in draft form by 31 January 1977. A final report will be issued by 31 March 1977.

SUBTASK 1 - TITLE: Analytical Techniques to Use Indicators for OSD Management

OBJECTIVE: To develop an analytical framework for use of the performance and cost indicators by OSD consistent with its defined roles and responsibilities as developed under Subtask 1.

SCOPE OF WORK: In performing this subtask, LMI will:

1) Develop an analytical framework for utilization of the indicators of readiness status for operation (mission)-oriented systems, including the meanings of the indicators, their usefulness at pinpointing management deficiencies, and the corrective intervention procedure for OSD. Corrective procedures to be reviewed include OSD policy statements, intervention with Service managers and possibly OSD-initiated management studies.

2) For indicators of efficiency trends in logistics activities, indicate how productivity trends developed from the indicators can be used for trade-off analysis among budget categories (e.g., new procurement vs. more maintenance of available equipment) and for major resource allocation decisions. In addition, the types of intervention by OSD in logistics management to correct productivity deficiencies will be analyzed and the preferred mechanism(s) for control through budget review, policy statement, etc., will be identified.

3) Using the results of 1) and 2), define a process by which OSD can exercise its responsibilities for short and long range program monitoring and planning.

SCHEDULE: The findings of this task will be presented to the Principal Deputy Assistant Secretary of Defense (I&L) in draft form by 31 March 1977. A final report will be issued by 31 May 1977.

ACCEPTED

DATE

17 June 1976

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report on the initial phase of Task 76-6 contains a description of the DoD Logistics System, organized by functions, such as supply, maintenance, etc. The scope and trends, organization and responsibilities, management and control, and reporting, accounting, and budgeting systems of each function are presented, in terms of the individual Services and Defense Agencies. Also included are the responsibilities and activities of the Office of		

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104 → the Secretary of Defense. This description of DoD logistics serves as a foundation for the design of a management indicator system, which is the principal purpose of Task 76-6.

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